



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**ENHANCING SITUATIONAL AWARENESS WHEN
ADDRESSING CRITICAL INCIDENTS AT SUBURBAN
AND RURAL SCHOOLS**

by

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December 2012

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INCIDENTS AT SUBURBAN AND RURAL SCHOOLS**

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ABSTRACT

This research identifies some of the terrorism-related vulnerabilities in suburban and rural school district facilities and operations throughout New York State. An evaluation of the resources and technologies available to first responders (police, fire, and EMS personnel) was conducted through a survey instrument delivered to agencies in the state, in order to identify areas for improvement to response capabilities and protocols for critical incidents in suburban and rural schools. The research also identifies and evaluates emerging technologies that can improve situational awareness, enhance safety, and assist in applying these policies when addressing critical incidents at suburban and rural school districts. The study makes specific recommendations for districts in New York State and highlights useful information for communities across the nation to develop strategies and techniques for first responders to share geospatial information, increase response capabilities, improve effectiveness, promote safety, and reduce vulnerability to terrorist threats and acts of violence.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACAMS	Automated Critical Asset Management System
ACLU	American Civil Liberties Union
ALI	Automatic Location Identification
AMQ	Asset Manager Questionnaire
ANI	Automatic Number Identification
AVL	Automated Vehicle Location
BOCES	Board of Cooperative Educational Services
CAD	Computer Aided Dispatch
CAP	Common Alerting Protocol
CIA	Central Intelligence Agency
CTI	Catastrophic Terrorist Incident
DEA	Drug Enforcement Administration
DHS	Department of Homeland Security
DOE	Department of Education
ECD	Emergency Communications Department (911 Center)
EMS	Emergency Medical Service
EVAP	Enhanced Visual Assessment Program
FBI	Federal Bureau of Investigation
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
GAO	Government Accountability Office
GIS	Geographic Information Systems
GITA	Geospatial Information and Technology Association

GPS	Incorporating Global Positioning Systems
IARD	Immediate Action Rapid Deployment
ICS	Incident Command System
IM	Instant Messaging
IPAWS	Integrated Public Alert and Warning System
LIDAR	Light Detection and Ranging (Laser Radar)
NIMS	National Incident Management System
NIPP	National Infrastructure Protection Plan
NYSSA	New York State Sheriffs Association
OACP	Ontario Association of Chiefs of Police
OCT	Office of Counter Terrorism (New York State)
OPEN	Open Platform for Emergency Networks
OPP	Ontario Provincial Police
POL	Pictometry On-Line
RCMP	Royal Canadian Mounted Police
RIT	Rochester Institute of Technology
RSS	Rich Site Summary
SAFE	School Action for Emergencies
SAVE	Safe Schools against Violence in Education
SEMO	State Emergency Management Office (New York State)
SEMS	Standardized Emergency Management System
SMS	Short Message Service
SRO	School Resource Officer
SWAT	Special Weapons and Tactics
UASI	Urban Area Security Initiatives

U.S.	United States
VEOC	Virginia Emergency Operations Center
VIPER	Virginia Interoperability Picture for Emergency Response
WAN	Wide Area Network

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I. INTRODUCTION

A. RESEARCH QUESTION

How can geographic information systems (GIS) and emerging technology effectively be employed to improve situational awareness and support the application of policies when addressing critical incidents at suburban and rural school districts?

B. PROBLEM STATEMENT

By their very nature, school districts in the United States are highly vulnerable to terrorist threats and acts of violence.¹ The activities scheduled at educational facilities, and the expectation for easy and open access to parents, students, faculty, staff, and local residents all contribute to a clear security threat potential on school grounds. Many districts have responded by developing strategies to heighten safety. Proper planning and coordination among district management, faculty, staff, and first responders is essential to quickly and efficiently bring together the available resources and ensure the safety of everyone using school facilities.

Large-scale crises, such as terrorist attacks, explosions, extensive power outages, and natural disasters including major winter storms, flooding, hurricanes, and tornados require a different response than the more “routine” emergency calls.² These events usually affect a larger area, often involving multiple jurisdictions and may interrupt critical infrastructure systems that would likely have a debilitating effect on the community.

It is critical to obtain comprehensive information regarding the particular site impacted by a major incident. Knowing the features of the surrounding terrain, specific characteristics of the buildings or area involved, positioning of critical assets (standpipes/fire hydrants, fire breaks, storm-sewers, access routes, etc.), and the location

¹ Kenneth S. Trump and Curtis Lovarello, “No Safe Havens,” *American School Board Journal* (March 2003), 19.

² “Incident Command System,” Federal Emergency Management Agency, last modified June 15, 2012, accessed September 1, 2012, <http://www.fema.gov/incident-command-system>.

of potential threats (flammable/hazardous materials, gas mains, vulnerable structures, etc.) are all crucial elements for the responding agencies. Having such data provides insight into the nature of the threat and the assets required to develop an effective response. Active and rapidly evolving situations present a complex environment for decision makers. The incident commander, of such a situation, should have access to detailed information regarding building dimensions, floor plans, maps with ingress and egress routes, and photo and video images of the building interior. The capability to share such information incalculably supports effective emergency response.

Many other organizations, outside of the primary first responders, who are involved in providing government services (health departments, water supply, sewer departments, human service agencies, probation departments, and others) and private-sector businesses (electric and natural gas suppliers, transit and school bus agencies, hospitals, and more) all need to know the precise location of the crisis in order to properly respond. Agencies not directly involved in the critical response must be able to plan alternate routes to support emergency responders, or to avoid conflict with responding resources. Information flow among agencies must be coordinated quickly and accurately to effectively share the appropriate resources, personnel, and related intelligence. The ability to visualize the area collectively, using a common system and process, further supports efforts to streamline emergency and strategic response.³

Aerial photography has been developed for many business applications and used for many purposes. Some of the programs and uses include sales, marketing, artistic impression, construction, security, public safety and government planning. Integrating aerial photography with GIS has provided the government planners and assessors with access to views buildings and properties to confirm features and dimensions of the properties from their desks. Tax map overlays, geo-political subdivisions and other boundary designations can be incorporated into the system to improve accuracy and efficiency in government operations.

³ Office of Justice Programs, ed., "Barriers to interagency Coordination," National Institute of Justice, last modified January 11, 2008, accessed August 31, 2012, <http://www.nij.gov/topics/crime/terrorism/barriers-to-coordination.htm>.

Environmental conservation and land use planning has benefitted from this technology by providing photographic views of either remote or densely populated areas that are not easily accessed by traditional means. Incorporating Global Positioning Systems (GPS) into the photographic mapping and GIS improves accuracy and specificity in identifying particular locations. This technology can support numerous agencies and operations regarding planning and testing systems, guidelines and protocols.⁴

Although there are no specific federal mandates requiring school administrators to have an “all hazards” plan and protocols in place to address on-site emergencies, most school districts have implemented guidelines and procedures to respond to basic emergencies.⁵ However, it is critical that local governments and first responders effectively coordinate their individual responses to efficiently deliver their respective services and navigate the particular layout of a specific incident scene. Strategic planning and testing critical response tactics for such significant incidents is vital to achieving maximum effectiveness. Collaborative communication with school officials helps to ensure that the established procedures and processes will provide optimal safety for students, faculty and visitors when addressing significant threats.

A significant challenge for first responders is receiving the appropriate information at the proper place and time in a useable format. The information must be in an applicable scale, with relative accuracy and in sufficient detail to support strategic development and plan implementation.⁶ New equipment and expertise is evolving to support the acquisition and integration of spatial information to meet the needs of emergency responders. GIS interface with communications systems may allow query and

⁴ Environmental Systems Research Institute, *Enterprise GIS for Local Government* (Redlands, California: ESRI, Inc., December 2007), 2–10.

⁵ United States Government Accountability Office, *EMERGENCY MANAGEMENT Most School Districts Have Developed Emergency Management Plans but Would Benefit from Additional Federal Guidance*, Report to Congressional Requesters, GAO-07-609 (Washington, DC: U.S. Government Accountability Office, June 2007), 1.

⁶ Environmental Systems Research Institute, *Challenges for GIS in Emergency Preparedness and Response* (Redlands, California: ESRI, Inc., May 2000), 12.

manipulation of data from multiple sites. The use of virtual environments and similar technology could create realistic simulations for training and prevention as well as coordinated disaster response.⁷

This emerging technology designed specifically for public safety applications utilizing GIS, GPS and aerial photography provides an opportunity to view, plan and test strategies and tactics quickly, efficiently and cost effectively. It is possible that in the relatively near future, numerous people from varying disciplines will no longer have to conduct drills in the field. A simulated virtual environment can presumably be created with this technology and “table top exercises” could be conducted with minimal expense to the agencies involved.

Field use of the technology during actual emergencies provides safe and accurate strategic planning as terrain (creeks, rock ledges and other impassable situations) can be easily identified. Ingress and egress routes, points of cover and concealment, assets (fire hydrants, etc.) and liabilities (gas mains, potentially explosive materials, etc.) can be quickly, efficiently and accurately identified and assessed without the need for costly and dangerous assignment of individuals at the emergency scene to provide reconnaissance.

Parents trust teachers and school administrators to protect their children while they attend school. Acts of violence and major emergencies involving school districts have increased over the years;⁸ however, funding to train and test strategic safety plans and procedures has been reduced due to the recent economic downturn, thus adequate resources may not be available to conduct traditional drills and testing protocols. Creative planning and the use of such emerging technology may provide an effective approach to achieving cost effective deployment of limited resources while achieving maximum output response.

⁷ Environmental Systems Research Institute, *Challenges for GIS in Emergency Preparedness and Response* (Redlands, California: ESRI, Inc., May 2000), 17.

⁸ David Satcher, M.D., Ph.D. Surgeon General, *Youth Violence: Report of the Surgeon General* (Washington, DC: U.S. Government, December 2001).

C. LITERATURE REVIEW

The threat of terrorist acts targeting faculty, staff, and students on school property is a relatively new issue being faced by officials in suburban and rural communities. The collective literature addressing potential threats to academic environments identifies legitimate concerns for school administrators and governmental officials to consider. Strategic planning, refinement of response protocols, and coordination with entities outside the campus environment are currently evolving with varying degrees of implementation across the country. The documents evaluated can be separated into subcategories: academic journals and magazine articles, conference materials, studies and research reports, news articles and periodicals, trade journals and commercial vendors and public services, state and local government reports, and federal government reports.

1. Academic Journals

The literature in this category encompasses a broad range of topics, from pediatric concerns based on the physiological development of children and the resulting impact from exposure to blunt trauma and explosive concussion, to the psychological outcomes of stress on students. The viewpoints from these publications are primarily clinical in nature and isolated to more long-term study results. They do not necessarily consider other community or environmental issues outside of the specific study and clinical setting. The documents focus directly on the particular discipline of the respective authors and do not attempt to engage a broader viewpoint or audience. The materials highlight the educational environments' vulnerability to various threats including terrorist attacks, anthrax scares, and potential sniper situations; as well as the victimization of school age children and their increased susceptibility to certain injuries sustained during an attack due to pediatric and adolescent physiological development. Brandenburg and Regens actually take an all-hazards approach to discussing the unique vulnerabilities of children in disasters.⁹

⁹ Mark Brandenburg and James Regens, "Terrorist Attacks Against Children: Vulnerabilities, Management Principles and Capability Gaps," *Journal of Homeland Security and Emergency Management* 3, no.4 (2006), 1-4.

The documents emphasize that terrorists seek to instill mass fear by attacking symbolic targets, altering the way people live their lives and eroding peoples' confidence in their government. Trump and Lovarello evaluated high-profile violent incidents at schools and surveyed school-based police officers confirmed their findings that whether the situation involves violence, terrorism, or a natural disaster there is a need for ongoing training, evaluation of safety procedures and testing of crisis planning.¹⁰

2. Magazine Articles and International Governmental and News Reports

The literature contained in this category provides examples of the nature of threats and the vulnerability involving school district properties to armed attack and other acts of violence. Issues of confidence in government and parental expectations of a safe and secure learning environment for students are discussed and evaluated.

The staff writer for the Christian Science Monitor evaluated the aftermath and lessons learned from a terrorist attack in Beslan, Russia that left 338 people dead, over half of those killed were children. In the community, a woman was heard stating, "We've never felt less protected," after the September 1, 2004, attack.¹¹ A common theme highlighted in the reports was that schools provide "soft targets," since the grounds and buildings are easily accessed, schedules are well established and publicized, and the procedures for handling mail were not designed with security as the primary concern.¹²

C. J. Chivers of Esquire Magazine provided an extensive article describing the horror experienced by parents, students, visitors, faculty and staff of School #1 in the town of Beslan, in North Ossetia, Russia, during a siege on the school by Chechnya separatist fighters in 2004. The article was written from the perspective of the individuals held hostage for three days within the school where 331 people died and more than 700 people were injured. The author concluded: "The siege ended with no victor. Faith in

¹⁰ Kenneth S. Trump and Curtis Lovarello, "No Safe Havens," *American School Board Journal* (March 2003), 19.

¹¹ Scott Peterson, "Al Qaeda among the Chechens," *Christian Science Monitor* (September 2004): 3, accessed November 18, 2011, <http://www.csmonitor.com/2004/0907/p01s02-woeu.html>.

¹² Kenneth S. Trump and Curtis Lovarello, "No Safe Havens," *American School Board Journal* (March 2003), 20.

Russia's government and the ability of its security agencies to protect its citizens has been shaken. Sympathy for Chechen independence has shrunk.”¹³

Police response strategies and coordination with school districts throughout Canada based upon the lessons learned from the tragedy at Columbine High School and other incidents of school violence in Canada and the United States are evaluated. The Royal Canadian Mounted Police (RCMP) developed an all hazards Lockdown Procedure Information Package that shares the best practices with law enforcement personnel and educators in order to assist in developing and implementing functional school plans for critical situations including, armed intruders, dangerous wild animals near the school, or hazardous material spill.¹⁴ The Canadian Ministry of Education in conjunction with the RCMP and the Ontario Association of Chiefs of Police (OACP) established mandatory requirements for the Province of Ontario:

1. All publicly funded school boards in Ontario must establish a lockdown policy to ensure the development and implementation of individual school plans; and
2. A minimum of two (2) lockdown drills must occur during each school year.”¹⁵

The RCMP conducts police / community training and discussions to address:

- School shootings (societal issues)
- Columbine “Catalyst for Action”
- Incident command and coordination
- Prevention and intervention strategies
- Dynamics or targeted school violence

¹³ C. J. Chivers, “The School,” *Esquire*, March 14, 2007, 31, accessed January 30, 2012, http://www.esquire.com/features/ESQ0606BESLAN_140.

¹⁴ Royal Canadian Mounted Police, *Lockdown Procedure Information Package*, (Ottawa Canada: Government of Canada, 2012) 3–4.

¹⁵ Ontario Province, Ontario Association of Chiefs of Police, Ontario Ministry of Education, *Guidelines for Developing and Maintaining Lockdown Procedures for Elementary and Secondary Schools in Ontario* (Ontario Canada: Ministry of Education, December 2008) 1.

- Social media
- Active Shooter issues
- Command Post Operations

The above topics are highlighted in detail in the “School Lockdown Presentation” lecture.¹⁶

Although the documents selected represent only a portion of the material published on the topic, they provide specific insights and referenced to the threats posed in local school districts and the procedures, procedures and recommended steps to better plan, prepare and evaluate when considering the issue of enhancing school safety.

3. Conference Materials

The literature and power point presentations in this category were produced for presentation at a conference in Washington, D.C., entitled “Schools: Prudent Preparation for a Catastrophic Terrorist Incident” and distributed by the National Strategy Forum (www.nationalstrategy.com). The conference objective was to discuss and evaluate school emergency preparedness beyond the existing paradigms to include an “all-hazard” approach. The audience was intended to include representatives from school administrations, safety experts, parent groups, health officials, pediatricians, psychiatrists, transportation specialists and representatives from FEMA, DHS and the DOE. The materials emphasize the vulnerability of schools to a wide range of threats including shootings, natural disasters, accidents, and catastrophic terrorism incidents (CTI)¹⁷.

According to the literature, school districts must take an “all hazards comprehensive approach” and prepare for self-reliance (for 24–72 hours), if an emergency is radiological, chemical, biological, an airborne toxic release, or a natural disasters, since emergency responders may be diverted to the disaster site. The schools

¹⁶ Royal Canadian Mounted Police, *School Lockdown Presentation PowerPoint Presentation*, (Ottawa Canada: Government of Canada through Shutterstock.com, 2012).

¹⁷ “School Safety in the 21st Century: Adapting to New Security Challenges Post-9/11” (2003), in *Schools: Prudent Preparation for a Catastrophic Terrorism Incident* (Chicago, IL: National Strategy Forum, 2004), 4.

should be responsible for feeding, sheltering, administering first aid, and handling mental health issues of the students until families can be reunited.¹⁸ The conference materials also stress the role of the parents before, during and after the emergency.¹⁹

Other conferences and related materials addressing school safety were primarily geared more toward addressing student actions and issues surrounding bullying, interpersonal actions and social influences.²⁰

4. Studies and Research Reports

The literature in this category reviews the emergency management plans currently in place for school districts. The Government Accountability Office (GAO) prepared and assessment for Congress regarding:

1. The roles of federal and state governments and school districts in establishing requirements and providing resources to school districts for emergency management planning,
2. what school districts have done to plan and prepare for emergencies, and
3. challenges, if any, that school districts have experienced in planning for emergencies, and communicating and coordinating with first responders, parents and students.²¹

The literature also contains private sector national studies that evaluate the capabilities of existing technologies use in emergency preparedness and response. The Environmental Systems Research Institute, Inc. examines the challenges that occur between humans and their environment under certain hazard conditions. A review of

¹⁸ School Safety in the 21st Century: Adapting to New Security Challenges Post-9/11 (2003), in *Schools: Prudent Preparation for a Catastrophic Terrorism Incident* (Chicago, IL: National Strategy Forum, 2004), 7.

¹⁹ Ibid. 15.

²⁰ School Safety Advocacy Council, "SSAC Symposium Announcement" (School Safety Conference), School Safety Advocacy Council (schoolsafety911.org.), <http://www.schoolsafety911.org/>.

²¹ Government Accountability Office, *EMERGENCY MANAGEMENT - Most School Districts Have Developed Emergency Management Plans, but Would Benefit from Additional Federal Guidance*, GAO-07-609 (Washington, DC: United States Government Printing, June 2007), 1.

emergency preparedness and response protocols was conducted and specific priorities for research, training, and policy recommendations for emergency preparedness were documented.²²

5. Local News Articles and Periodicals

The literature in this category outlines largely local initiatives. The collected materials consist of local newspaper articles and private institution evaluations of specific school districts safety planning information. Several of the articles had political overtones and were presented in such a way as to address specific issues and garner support from a particular group of people. Legislators were featured for enacting laws specifically addressing terrorist acts, including providing tools to more easily detect terrorism, toughening penalties for support of terrorism, and enacting new preparedness measures to prevent terrorist acts from occurring.²³

Individual school districts were recognized for establishing specific procedures to cover the entire spectrum of school safety challenges. Some of the issues addressed were communication planning, sheltering activities, emergency supplies, evacuation strategies and more.²⁴

Although the documents specifically identified represent a small portion of the articles published in local newspapers nationally, they provide examples of the types of activities that local elected officials are performing across the country. Many school district's staff and administrators in areas across the country are working diligently to put plans in place to enhance safety on school district properties.

²² Environmental Systems Research Institute, *Challenges for GIS in Emergency Preparedness and Response* (Redlands, California: ESRI, Inc., May 2000).

²³ John Toscano, "NYS Anti-Terrorism Bill Passes, Law Enforcement Gets New Tools To Act," *Queens Gazette* (Queens, NY), July 28, 2004, Local edition, accessed September 5, 2011, <http://www.qgazette.com/news/2004-07-28/feature/006.html>.

²⁴ Irvine Unified School District, "Emergency Procedures and School Safety Facts," Irvine Unified School District Comprehensive School Safety Information, December 2007.

6. Trade Journals, Commercial Vendors and Public Services

The literature and online presentations contained in this category provide an array products and technologies to support homeland security planners and first responders. The capabilities and key features include critical infrastructure assessment tools, key resource inventory management support, and practical ways to comply with national strategies and the requirements of the National Incident Management System (NIMS) and the National Infrastructure Protection Plan (NIPP) and other risk management framework.²⁵ .

The use of oblique photography, along with light detection and ranging (laser radar) for topographical mapping, are concepts and services that are explored.²⁶ Aerial photography is a specialty service performed by several individuals and corporations throughout the United States. The companies tend to adapt their processes to the particular needs of the customer. Most specialize in certain areas of expertise to specifically address the particular requirements of that discipline, including: custom architectural images²⁷, real estate sales and marketing,²⁸ construction support²⁹, government planning and specialty mapping,³⁰ environmental planning and engineering,³¹ public safety response³² and geographic information services.³³ The products and services provide opportunities for decision makers to access imagery infused with data to blend with integration and reporting capabilities.

²⁵ Department of Homeland Security, "Counterterrorism," Automated Critical Asset Management System (ACAMS), accessed November 19, 2011, http://www.dhs.gov/files/programs/gc_1190729724456.shtm.

²⁶ Pictometry, "Company Background," Copyright 2011, accessed November 19, 2011, http://www.pictometry.com/index.php?option=com_context&view=article&id=103&Itemid=59.

²⁷ Above All Aerial and Specialty Photography, <http://www.aboveallphoto.com/services.html>.

²⁸ SkySite Aerial Photographs, http://www.skysiteaerial.com/aerial_advantage.html.

²⁹ Bergman Photographic Service, Inc., <http://www.bergmanphotographic.com>.

³⁰ Fugro Earthdata, "PanoramX," <http://www.fugroearthdata.com>.

³¹ Sanborn Total Geospatial Solutions, "Geobook Services," http://www.sanborn.com/services/geobook_svc.asp.

³² Pictometry, <http://www.pictometry.com>.

³³ Geospan, "GeoVista USA," <http://www.geospan.com/ourmission.asp>.

The information contained in this category affords first responders “all hazards” planning and response capabilities through geospatial data as well as access to emergency response plans that can be viewed en route to scenes via mobile data terminals.³⁴ Detailed instructions for effective, proactive crisis planning, prevention, response and recovery from disasters are also included.³⁵ Based upon budget and specific needs, products and services are available to be purchased from private vendors or accessed through the federal government at no charge to the end user.³⁶

Numerous products, vendors, corporations and government agencies were reviewed and researched. The referenced materials are merely a sampling of the technology and capabilities available through both the public and private sectors. The examples noted were products and services that were designed to address public safety concerns.

7. State and Local Government Reports

This literature identifies New York State homeland security strategies and reports. The information includes issues regarding public safety, cyber security, critical infrastructure analysis and protection, intelligence gathering, and information technology.³⁷ Although the Department of Homeland Security (DHS) defined eighteen different ‘Critical Infrastructure Sectors’ (including nuclear reactors, dams, national monuments, transportation systems and more),³⁸ there is an apparent gap in the strategic planning as educational institutions were not specifically identified.

³⁴ Prepared Response, Inc. “Rapid Responder Crisis Management System,” accessed November 19, 2011, <http://www.preparedresponse.com/rapidresponder/default.html>.

³⁵ Mike Dorn et al., *Jane's School Safety Handbook*, 2nd ed. (Alexandria, VA: Jane's Information Group, 2004).

³⁶ Office of Infrastructure Protection, *Computer-Based Assessment Tool*, ed. U.S. Department of Homeland Security (Washington, DC: U.S. Department of Homeland Security, April 2008).

³⁷ Gov. David A. Patterson, *New York State - Office of Homeland Security*, Annual Report 2009 (Albany, NY: NYS Government Printing, 2009), 6.

³⁸ Gov. David A. Patterson, *New York State - Office of Homeland Security*, Homeland Security Strategy 2009 (Albany, NY: NYS Government Printing, 2009), 14.

Local jurisdictional strategic response protocols and policies were reviewed with respect to bomb threats³⁹ and responses to hostile armed attacks.⁴⁰ School district internal policies were evaluated to determine whether their protocols would interface with standard police procedures. Based upon the school districts respective policies, it appeared as though the multidisciplinary school district crisis teams should be integrated within the Incident Command System (ICS) of the DHS (2004) National Incident Management System (NIMS) to help facilitate a standardized response to emergencies.⁴¹ Those teams should include principals, guidance counselors, nurses, psychologists and teachers.⁴² State and local officials should help schools comply with the requirements of the Standardized Emergency Management System (SEMS).⁴³

Significant planning, coordination, and testing with school districts and first responders is needed to ensure the effective application of established policies and protocols. Each of the local school districts had plans at their respective “building-levels” to address acts of violence, natural disasters, and technological disasters. These plans conform to the requirements of the New York State Safe Schools Against Violence in Education (SAVE) legislation enacted in 2000.⁴⁴

Although the documents selected are not a comprehensive listing of all of the material published on the topic, they provide a sampling of the initiatives occurring at the state and local level throughout the country.

³⁹ County of Monroe - Office of the Sheriff, *Bomb Threat Procedures*, Emergency Order, 14–11 (Rochester, NY: Monroe County Publishing, 2011).

⁴⁰ County of Monroe - Office of the Sheriff, *Special Weapons and Tactics*, Emergency Order, 109–08 (Rochester, NY: Monroe County Publishing, 2008).

⁴¹ Amanda B. Nickerson, Stephen E. Brock, and Melissa A. Reeves, “School Crisis Teams Within an Incident Command System,” *California School Psychologist* 11 (2006): 63.

⁴² S. Peterson and R. Straub, (1992) *School Crisis Survival Guide: Management Techniques and Materials for Counselors and Administrators*. West Nyack, NY: The Center for Applied Research in Education.

⁴³ Megumi, Kano, Dr. P.H., “District and School-level Preparedness for Emergencies and Disasters in California: The Effects of Demographic Characteristics, Resources and Prior Experiences” (PhD diss., Dr.P.H. University of California. Los Angeles, 2007).

⁴⁴ Webster Central School District, “District-wide School Safety Plan,” June–July 2010, Emergency Coordinator’s Office, Schroeder High School Building.

8. Federal Government Reports

The federal government has produced numerous documents regarding planning and emergency responses. However, the educational system does not appear to have been independently considered within their comprehensive strategic plan, since schools and campuses are not specifically identified in the National Strategy for Physical Protection of Critical Infrastructure and Key Assets.⁴⁵ Additionally, school districts do not appear to be fully integrated into the federal grant funding process.

According to the May 2007, United States Government Accountability Office (GAO) report on the “Status of School Districts’ Planning and Preparedness,” the Departments of Education and Homeland Security provide funding for emergency management planning; yet school districts are not clearly identified as entities to which state and local governments may disburse grant funds. The consequence of these exclusions is that many districts experience challenges in effectively planning and preparing for emergencies and communicating effectually with parents and first responders.⁴⁶

The Federal Emergency Management Agency (FEMA) published the “Primer to Design Safe School Projects in Case of Terrorist Attacks” in December 2003 to provide the design community and school administrators with information and techniques to protect students, faculty, staff, and their buildings from terrorist attacks.⁴⁷

Included in the reports generated by federal agencies is the tactical analysis of and response to armed school violence. The U.S. Secret Service, following the armed attack at Columbine High School in April 1999, launched the ‘Safe School Initiative’ focusing

⁴⁵ President of the United States, *National Strategy for Physical Protection of Critical Infrastructure and Key Assets* (Washington, DC: Government Printing Office, 2003), 9. accessed September 5, 2011, http://www.dhs.gov/xlibrary/assets/physical_strategy.pdf.

⁴⁶ Cornelia M. Ashby, *Emergency Management - Status of School Districts’ Planning and Preparedness*, U.S. Government Accountability Office—Testimony before the House of Representatives (Washington, DC: U.S. Government Printing, 2007), 1.

⁴⁷ Federal Emergency Management Agency, *Primer to Design Safe School Projects in Case of Terrorist Attacks Risk Management Series FEMA 428* (Washington, DC: FEMA, 2003), 1. Accessed September 6, 2011, <http://www.fema.gov/pdf/plan/prevent/rms/428/fema428.pdf>.

on school violence and adapting research from investigating assassinations to evaluating incidents of school-based attacks.⁴⁸ That study reviewed the characteristics of targeted school violence, analyzed the attackers, evaluated threat assessments, and assessed the potential for school violence prevention.

National preparedness studies have shown that nearly all school districts surveyed have an evacuation plan to address mass casualty events, but only a few districts have conducted drills to test their plans. Suburban and rural districts were identified as less prepared than urban districts.⁴⁹ The deficiencies in preparedness appear to be related to budget deficits and reduced grant funding to less densely populated areas. Federal budgetary reductions have reduced 2011 funding for Urban Area Security Initiatives (UASI) Tier II cities⁵⁰, virtually eliminating financial support for security programs in suburban and rural communities.

9. Conclusion / Summary

The conclusions reached in the reviewed literature shared several specific issues:

1. There is significant planning and training materials available for school districts;
2. School administrators need to coordinate with local first responders in planning for emergency response;
3. Emergency response plans must be tested with local public safety agencies; and
4. School districts need funding and support to implement emergency planning initiatives.

To the contrary, the literature also seems to conclude that school districts are not coordinating with local first responders in the planning process and are not training staff

⁴⁸ Bryan Vossekuil et al., *Final Reports and Findings of the Safe School Initiative: Implications for Prevention of School Attacks in the United States* (Washington, DC: May 2002), 3.

⁴⁹ James Graham, MD et al., “Mass-Casualty Events at Schools: A National Preparedness Survey” *Pediatrics* 117, no. 1: 8–15.

⁵⁰ Federal Emergency Management Agency, *FY 2011 Homeland Security Grant Program – Urban Areas Security Initiative* (Washington, DC: FEMA, 2011), 1.

on a specific responses needed during an emergency. School districts, especially in rural areas, are not effectively utilizing the materials and support available to them. Other than the mention of budgetary constraints, the literature falls short of identifying the reasons for this apparent lack of planning and strategy implementation.

This study will review the current approaches used in suburban and rural school districts within New York State to establish a baseline for coordination of resources with first responders and evaluate the technology along with the policies and strategies currently in use to establish best practices.

II. RESEARCH STRATEGY

A. STUDY METHODS

The focus of this research was to evaluate what resources and technology that are available to first responders (police, fire, and EMS personnel) in New York State and to establish a baseline of information sharing processes and practices. The synergy and interoperability of the respective disciplines responding to school emergencies is critical to the planning for and mitigation of major incidents. Most school districts have protocols in place for addressing serious incidents involving school district properties. There does not appear to be consistent and effective integration of the first responders into the school district plans and strategies.⁵¹ The constitutionally established Office of Sheriff in New York State is responsible for providing police protection to communities that have chosen not to establish a police department for the provision of law enforcement services. Many of these communities are suburban and rural in nature and have different needs and resources available to them than communities located in an urban area.

The proposed approach of this study was to conduct sampling research and evaluate current practices, in order to recommend improvements to policy and procedural application of safety measures designed for school district properties across the state. The research also identified how emerging technology can support efforts to improve situational awareness, enhance safety and assist in the application of policies when addressing critical incidents at suburban and rural school districts. The study outcomes provided information to develop strategies and techniques for first responders to share geospatial information and increase response capabilities, improve effectiveness and promote safety.

This research consisted of a review of the operations of the sheriff's offices in the 55 counties within New York State (outside of the City of New York and Long Island) to

⁵¹ United States Government Accountability Office, *EMERGENCY MANAGEMENT Most School Districts Have Developed Emergency Management Plans but Would Benefit from Additional Federal Guidance*, Report to Congressional Requesters, GAO-07-609 (Washington, DC: U.S. Government Accountability Office, June 2007).

determine the level of integration that each agency has with the fire and EMS community when responding to serious situations involving school district properties. The data was collected through interviews and surveys of sheriff's office staff in those respective counties. The questions asked in the survey were:

1. How many suburban and rural school districts do you have in your county?
2. Does each district have an emergency response plan for basic emergency ("all hazards") response?
3. Do the plans for each of the school districts in your county contain the same information and follow the same format?
4. Do the plans incorporate building floor plans, location of assets (fire hydrants, first aid access, etc.) and hazards (gas mains, location of toxic chemicals, etc.)?
5. Are the plans in an electronic format?
6. Are the plans tested and drills conducted with police, fire, and EMS personnel? If so—how often? If not—Why not?
7. Would the ability to test and conduct drills of the plans in a simulated or virtual environment assist your agency in complying with the suggested guideline of testing or conducting drills emergency plans annually?
8. Do you have access to photographs of the interior (each room) of the school buildings?
9. Are the photographs in an electronic format?
10. Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?
11. Do you have aerial photographic images of the entire county?
12. Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: **ACAMS Automated Critical Asset Management System**—or—a virtual data system in "the cloud" with secure access by police, fire, and EMS).

13. Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.

(Refer to **Appendix A** to review the entire survey instrument and responses.)

All of the school districts throughout New York State appear to have plans currently in place for responding to school based emergencies. This is consistent with other areas of the country because, according to research conducted by the United States Government Accountability Office (GAO), an estimated 95 percent of all school districts have written emergency management plan in place however the content of the plans vary.⁵² The recent economic downturn has likely affected the traditional capabilities of local law enforcement to staff and respond to school request and needs. The GOA report also noted that many school districts have experienced challenges in the preparation for crisis situations. In almost 40 percent of the school districts with emergency management plans currently in place, officials have experienced a lack of partnership, limited funding, insufficient time to plan, or deficiencies in the interoperable capabilities of equipment used by school districts and first responders.⁵³

Based on the information received from the research conducted, a strategy was developed to utilize emerging technology to improve situational awareness, promote safety and assist in applying uniform policies to coordinate the efforts for all first responders when addressing critical incidents at suburban and rural school districts locations.

B. SURVEY RESULTS AND ANALYSIS

The survey tool was distributed to 55 counties of New York State (outside of the Burroughs of the City of New York and Nassau and Suffolk Counties on Long island), as the primary thrust of the research was to evaluate practices occurring in suburban and

⁵² United States Government Accountability Office, *EMERGENCY MANAGEMENT Most School Districts Have Developed Emergency Management Plans but Would Benefit from Additional Federal Guidance*, Report to Congressional Requesters, GAO-07-609 (Washington, DC: U.S. Government Accountability Office, June 2007), 1.

⁵³ Ibid.

rural school districts involving a less concentrated population base. The distribution of the survey was coordinated with the support of the New York State Sheriff Association (NYSSA) in Albany, New York. The questions were incorporated in a “Survey Monkey” format under the title of “New York State Sheriff’s Association - Homeland Security Survey.” Of the 55 counties queried, 34 of the county sheriff’s offices responded to all of the questions posed. Input was received from each of the nine upstate regions of New York State including:

1. Chautauqua – Allegheny
2. Niagara Frontier
3. Finger Lakes
4. Thousand Islands – Seaway
5. Adirondacks
6. Central Leatherstocking
7. Capital – Saratoga
8. Catskills
9. Hudson Valley
- 10.

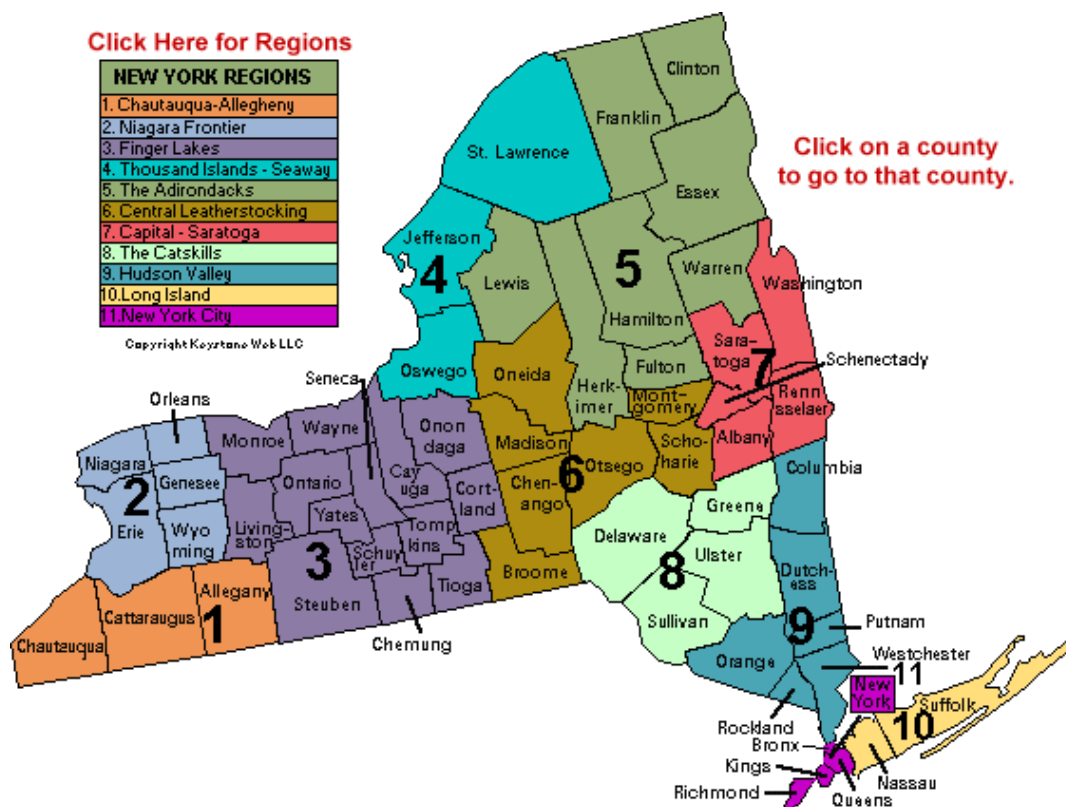


Figure 1. New York Counties and Regions

The responses represent approximately 350 school districts located in suburban and rural regions of the state. The various counties encompass regions of vast expanses of open land and sparse populations to suburban areas surrounding heavily populated urban centers. Urban school districts were not included in the survey results and the resources and dynamics of those examples differ significantly from the capabilities and funding available to suburban and rural school districts. *(Refer to **Appendix B** for a listing of the counties included in the survey.)*

A majority of the counties queried responded to the survey with detailed information. Having responses from all nine (9) regions of the state ensures that the survey materials capture an adequate depiction of the pertinent information available to appropriately represent a quality sampling of the data for the entire state.

Almost the entire sampling of nearly 350 school districts in the survey complied with the regulations by having an emergency response plan developed for “all hazards”

and basic emergencies. Although each district may have plans in place for addressing emergencies, almost one-half of the counties surveyed noted that the information in the plans was not uniformly structured and that the formats were not completely similar. Thus, police, fire, and EMS response from school district to school district would likely vary based upon the respective protocols of that particular district.

Approximately 30 of the 34 responding agencies note that the emergency plans incorporate building floor plans, location of assets (fire hydrants, first aid access, etc.) and location of hazards (gas mains, toxic chemical storage, etc.); however, only one-half of the districts have the plans in an electronic format. Without electronic formatting, the records are not usually easily located, accessed, or updated. Having inaccurate floor plans (due to construction and renovations) inhibits accurate planning and poses serious safety concerns for first responders.

Nearly one-third of the Sheriff's Offices reported that the school districts in their counties do not test the plans and conduct drills with police, fire and EMS personnel. Some of the agencies advised that the school district management is reluctant to having a police presence in the school at all. In conversations with sheriffs, many mentioned that fiscal constraints prevent them from conducting desired training and any other activity outside of the primary policing and patrol activities. All of the sheriff's office personnel completing the surveys believed that the ability to test and conduct drills based on the plan, in a simulated or virtual environment would greatly assist their agency. Such a process would allow agencies and school districts to comply with the suggested guidelines for testing and conducting annual drills of the emergency plans. With a struggling economy and shrinking budgets tabletop exercises are a cost effective approach as full-scale drill are extremely costly and difficult to coordinate with multiple agencies.

Almost every county surveyed had access to aerial photographic images of the school district properties contained within their respective jurisdiction and over ninety percent of those responding acknowledged that they had access to aerial photographs of

the entire county they serve. They all believed that having an automated electronic process to share plans and images with other first responders would be beneficial to support their coordinative efforts.

When asked if they experienced any problems, impediments, or resistance to implementing safety programs in the school districts for which their agencies had responsibility to provide primary police protection, over two-thirds of the respondents acknowledged some restricting issue. The problems they noted consisted of:

- Lack of cooperation from district school staff
- Poor communication among agencies
- Inconsistent emergency notification
- Lack of personnel
- Reluctance or the school district administration to allow certain aspects of trained programs to be used in their buildings (Active Shooter, etc.)
- Social / Religious influence (Amish and Mennonite populations)
- Plans were lost in the flood of August 28, 2011
- Financial constraints

All of the aforementioned issues and a belief from some school officials that “that won’t happen here” provide obstacles to implementing safety programs; however, the most frequently mentioned issue was that the law enforcement agency and the school district were facing significant budgetary challenges.

Several of the sheriff’s offices responded that they have received grant funding to purchase new technology to support school safety initiatives. One agency had radio receivers installed in the 911 Center to remotely unlock every school building in the county to allow access to law enforcement 24 hours a day; while another county noted that the school districts denied police officials access to buildings with keys/fobs. Reductions in grant funding for a law enforcement presence in school (School Resource Officers (SRO) and interior patrols) continue annually.

“Active Shooter” training was identified in the survey as an initiative that several agencies were pursuing; however, a few school districts indicated that there was reluctance by school administrators to approving a practical application of the “Active Shooter” training in their school buildings.

The data provided in the survey established a baseline for determining the current strategies employed, the level of sophistication actively pursued, the challenges experienced by first responders and school districts, and the interest and opportunities for improvement. Based upon the responses, there appears to be an interest in enhancing security and improving a coordinated response to emergency situation involving suburban and rural school district properties. Certain social, financial and political obstacles may be encountered; however, the desire to improve service in this particular area is apparent and technological solutions may support efforts to improve safety and enhance situational awareness.

III. TECHNOLOGICAL FIELD ENHANCEMENTS

A. EXISTING AND EMERGING TECHNOLOGIES

Emergency first responders in local communities have traditionally included police, fire, and emergency medical staff. More recently, due to increase in threats and the aging of critical infrastructure, cellular, natural gas, electric, water, and satellite-service providers play a much more active and acute role in emergency response. Achieving quick, accurate, and effective communication and coordination among these public sector (police, fire, EMS) and private sector agencies (cellular, natural gas, electric, water, satellite service) has posed significant challenges. Each of the service providers operates on a different radio frequency and there is no shared communication network or technology standard. These respective responders all experience geospatial dilemmas, as each discipline must be able to determine exactly where the emergency is located, consider the uniqueness of the adjacent terrain, pinpoint the area of the specific threat, and identify the assets available to address the situation.

Demands for the public and private sector services mentioned above are usually rather unpredictable in terms of time, location, and the particular equipment and resources required at a specific incident scene.⁵⁴ The urgency associated with crises implies that decisions regarding the dispatching of these emergency and specialized services must be done expeditiously. Often, the resulting difference between life and death for victims of a tragedy is in direct correlation to the response time of the first responders. Effective communication and coordination of such services critically influence the response time to major incidents. There have been persistent efforts on the part of the emergency services and other partnering agencies to employ geospatial technology to improve response operations.

Emergencies, by their very nature, encompass geospatial elements. In order to respond to and mitigate an emergency, first responders need accurate information

⁵⁴ Guoray Cai et al., “Human-GIS Interaction Issues in Crisis Response,” *International Journal of Risk Assessment and Management* (2006), 2.

regarding the location of an emergency in order to direct resources to the particular geographic location. Mapping has played a critical role for first responders for years; now coupling the benefits of emerging technological conveyances for identifying geospatial information with traditional route locating has shown great potential, but it still possesses challenges with respect to coordinating multi-disciplinary responses to emergencies.

Geospatial information is data regarding a specific geographic location. Examples may include the layouts of a building, topography surrounding an incident, points of ingress for site access and egress routes of travel for evacuation. The geospatial data utilized for responding to and addressing emergencies can significantly define success or failure for an incident.

Human society is vulnerable to various crises, ranging from hazardous exposure, natural disasters (hurricanes and forest fires), to organized terrorist attacks threatening national security. These crisis events have overwhelming magnitude, are highly dynamic, and require immediate response. Demands for resources are largely unpredictable in terms of time, location, and specific resources needed. Moreover, the urgency associated with crises implies that decisions must be made rapidly. To deal with the complexity and uncertainties while making decisions, crisis managers often work in teams, sharing information, knowledge, and judgment.⁵⁵

Information sharing, coordination and cooperation require a standard format for which to share the intelligence. Data is received from multiple sources, all possessing certain geospatial information including satellite imagery, social networks, radio reports, and many other sources. “Geospatial information technologies are sensors, systems, and software that collect, manage, manipulate, analyze, model, and display information about locations on the earth’s surface.”⁵⁶ In the stressful environments in which emergency responders operate, they tend to make decisions based upon their training and previous experience. It is extremely important that information they receive is clear and concise.

⁵⁵ Guoray Cai et al., “Human-GIS Interaction Issues in Crisis Response,” *International Journal of Risk Assessment and Management* (2006), 2

⁵⁶ United States Government Accountability Office, *GEOSPATIAL INFORMATION Technologies Hold Promise for Wild land Fire Management, but Challenges Remain*, Report to Congressional Requesters, GAO-03-1047 (Washington, DC: U.S. Government Accountability Office, September 2003), 1.

The transition to electronic processes is occurring rapidly, and as younger more technically advanced employees transition into police, fire and EMS agencies, the reliance upon hardcopy formats and archaic systems will no longer be considered. As recent as ten years ago, many first responders did not feel comfortable using technology during emergency response. “The vast majority of first responders (such as police, fire, emergency medical personnel) were not that familiar with GIS, nor are they likely to use these systems in the immediate response or rescue phase.”⁵⁷

Geospatial information systems have been developing for decades, but computing capabilities and mobile platforms have made categorizing and accessing databases significantly easier in the field. Most first responders now have the ability to access vast amounts of data over handheld and in-vehicle mobile devices at emergency scenes. In 2009, the Geospatial Information and Technology Association (GITA) noted, “Over the past 20 years the geospatial community has been maturing its ability to organize, discover, share and use information with a geospatial component.”⁵⁸ Consumer oriented tools have made it possible for the nontechnical specialist to use geospatial information.

Geospatial information is a fundamental component of any emergency response for first responders. The geographic nature of emergency scenes, hazards and response components must be known and processed to effectively mitigate incidents. As technology continues to develop, research and product development continually enhance methods for conveying vast amounts of information to emergency responders. Coordination and the effective transfer of information to the multiple disciplines involved in responding to emergencies pose challenges for first responders to manage and optimally plan for and respond to disasters.

Over the past three decades, public safety agencies have embraced technological advancements with computer aided dispatch (CAD) involving the integration of GIS

⁵⁷ Susan L. Cutter, *GI Science, Disaster, and Emergency Management*. Technical report. Boulder, CO: Blackwell Publishing Ltd., 2002. 442.

⁵⁸ Geospatial Information and Technology Association. *Geospatial Dimensions of Critical Infrastructure and Emergency Response*. Research report. White Paper Series - Spatial Infrastructures. Aurora, CO: GITA, 2009. 9.

capabilities to utilize street address databases to assist with automatic location identification (ALI) and automatic number identification (ANI)⁵⁹. Geocoding capabilities to determine the exact latitude and longitude coordinates for specific addresses⁶⁰; automated vehicle location (AVL) technology to help dispatchers with identifying the closest units to respond to a specific location; and the use of mobile computers, along with GPS and wireless communication, has expedited the exchange of information with all responding units.

Using geospatial capabilities effectively has undoubtedly, reduced response times, promoted situational awareness, and has prospectively saved lives. Expanding these capabilities to other service providers (utility companies, health service, transportation, and others) will benefit residents and improve public safety.

B. TECHNOLOGICAL RESPONSE STRATEGIES

Large-scale crises, such as terrorist attacks, explosions, extensive power outages, major winter storms, flooding, hurricanes, and tornados require a different response than the more “routine” emergency calls. These events usually affect a much larger area, often involving multiple jurisdictions and may interrupt critical infrastructure systems that would likely have a debilitating effect on the community. In New York State, first responders are frequently required to coordinate with service providers from adjoining jurisdictions, the New York State Emergency Management Office (SEMO), and the Federal Emergency Management Agency (FEMA) operations staff.

Whether it is a large-scale emergency or a high-profile news-attracting event involving a school, place of worship, or a significant landmark, coordinating the activities of emergency responders and ancillary service agencies is an arduous task; however, technological advances in geospatial systems have provided opportunities to address these challenges.

⁵⁹ Dispatch Magazine On-Line, *E911 Glossary*, ‘ANI – ALI,’ accessed December 11, 2011, <http://www.911dispatch.com/911/911glossary.html>.

⁶⁰ Google Maps Web Service, *The Google Geocoding API*, ‘What is Geocoding?’, <http://code.google.com/apis/maps/documentation/geocoding/#Geocoding>.

Obtaining critical information regarding the specific site impacted by a major incident is a valuable tool. Knowing features of the surrounding terrain, specific characteristics of the buildings or area involved, positioning of critical assets (standpipes/fire hydrants, fire breaks, storm sewers, access routes, etc.), and the location of potential threats (flammable/hazardous materials, gas mains, vulnerable structures, etc.) are all valuable facts for the responding agencies. Having such data provides insight into the nature of the threat and the assets required to develop an effective response. Active and rapidly evolving situations present a complex environment for decision makers. The incident commander, of such a situation, should have access to the latest remote sensing technologies including aerial photography and street level images. Information regarding building dimensions, floor plans, ingress and egress routes, and photo and video images of the interior all support effective emergency response.

The capabilities of GIS are enhanced by new technology and the incorporation of orthographic imagery, oblique photography, street-view photography, light detection and ranging (LIDAR), and three-dimensional modeling. Utilizing oblique imagery and street-level photographs increases the accuracy of the directives given by dispatchers to responding units and provides an ability to confirm specific geography at a particular scene.⁶¹ Photographs integrated with GIS data applications afford an opportunity to precisely assess situational characteristics and conduct strategic planning. A well-developed geographic information system can significantly improve planning efforts and decision making.⁶² Imaged-based solutions enhance the pace of recognition and provide responders with various views of the location, so they can more readily plan and focus on their respective responsibilities.⁶³

⁶¹ Geospan, "Solutions," *911 Public Safety –Geovista E911 Interface*, <http://www.geospan.com/s-911ps.asp>.

⁶² Sanborn Total Geospatial Solutions, "Solutions," *Utilities & Engineering*, http://www.sanborn.com/solutions/utilities_engineering.asp.

⁶³ Pictometry, "Industries," *Public Safety*, http://www.pictometry.com/index.php?option=com_content&view=article&id=60&Itemid=69.

C. DEFINITIONS

1. Orthographic photography is a series of aerial photographs taken from a direct vertical direction to the ground.
2. Oblique photography is a series of aerial photographs taken from angles in relation to the ground (providing opportunities to measure objects and structures on the ground).
3. Street level photography is a series of photographs taken at ground level horizontal to the ground (providing a pedestrian viewpoint).
4. LIDAR is light detection and ranging (laser radar) mapping technology that determines the distance to an object or surface using laser pulses to measure elevation.
5. 3-D Modeling is photography using high-resolution oblique imagery and technology to enhance features in the photograph to present a “lifelike” three-dimensional image.

D. CURRENT SERVICE PROVIDERS

Aerial photography is a specialty service performed by several individuals and corporations throughout the United States. The companies tend to adapt their processes to the particular needs of the customer. Most specialize in certain areas of expertise, including custom images, real estate sales and marketing, architectural and construction support, mapping, and geographic information services.

SkySite Aerial Photography provides custom images for sales and marketing. They target the real estate market and special events. Their primary business is using different applications of elevated and vertical photographs.⁶⁴

Above All Aerial and Specialty Photography concentrates on aerial oblique, geo-rectified vertical and planometric architectural photography, along with video and video stabilization services. The company is involved extensively in graphic design and post-production customized services for the video industry.⁶⁵

⁶⁴ SkySite Aerial Photographs, http://www.skysiteaerial.com/aerial_advantage.html.

⁶⁵ Above All Aerial and Specialty Photography, <http://www.aboveallphoto.com/services.html>.

Bergman Photographic Services, Inc. targets the precision mapping and oblique aerial photographic market. They specialize in aerial photography for sales, site identification, construction progress, and visual displays. Their focus is custom photography for business applications.⁶⁶

PanoramiX, provided by **Fugro Earthdata**, provides high resolution vertical and oblique images for topographic and planometric mapping systems. Their products specialize in government planning efforts and specialty mapping.⁶⁷

Sanborn Total Geospatial Solutions provides a full array of aerial photographic services, including orthographic and oblique photography, GIS services, ground-based LIDAR, and mapping. This corporation specializes in providing government and corporate decision makers with useful geospatial information in an easy to digest “Geobook.” The format is useful for technical and non-technical audiences. It is a cost-effective approach to provide multiple viewers access to and interpretations from geospatial data.⁶⁸ **Land Cover Mapping Applications** are an extensive part of the services that **Sanborn** provides to customers. Changes in land use and land cover can be monitored to gauge impacts on people, the economy, and the environment. **Sanborn’s** products provide tree canopy calculations for storm water runoff, pollution impact and drainage studies along with other forestry, ecosystem, planning, and engineering applications.⁶⁹

Geospan offers a full array of aerial photographic services including, orthographic and oblique photography, GIS services, and mapping capabilities. They, also, incorporate street-level views of addresses to support local property searches, advertising, real estate, travel, navigation, insurance, and government requirements.

⁶⁶ Bergman Photographic Service, Inc., <http://www.bergmanphotographic.com>.

⁶⁷ Fugro Earthdata, “PanoramX,” <http://www.fugroearthdata.com>.

⁶⁸ Sanborn Total Geospatial Solutions, “Geobook Services,” http://www.sanborn.com/services/geobook_svc.asp.

⁶⁹ Ibid.

GeoVista USA, a subsidiary of **Geospan**, provides for the collection, processing, and delivery of images of the top one hundred metropolitan areas in the nation.⁷⁰

Pictometry is another company that addresses the aerial photographic needs of the public and private sector. They offer oblique and orthographic photography, LIDAR (topographic measuring), three-dimensional modeling, street views and interior photography capabilities. **Pictometry** also provides an online service to ensure access twenty-four hours per day, seven days a week.⁷¹

Based upon the capabilities and the nature of the services offered, only **Sanborn Total Geospatial Solutions**, **Geospan**, and **Pictometry** provide the services tailored to emergency-response applications. The products provided by **Sanborn**, although designed with the emergency-services sector in mind, actually appear to prioritize more static planning applications rather than dynamic and interactive field use.

Geospan and **Pictometry** both provide support to a variety of state and local government GIS applications including, E-911, emergency management, homeland security, law enforcement, fire service, emergency medical service, risk management, and other services. Both companies have the capabilities to address the issues mentioned in the previously noted problem statement.

E. PUBLIC SAFETY APPLICATION

Pictometry appears to afford an advantage over **Geospan** for public safety applications based on six specific criteria⁷²:

- 1. Resolution** (3” or 4” ground sample distance)
- 2. Consistent “leaf-off” photographs**
- 3. Coverage** (# of communities contracting in the U.S.)
- 4. Most current photographs** (updated every 2 years)

⁷⁰ Geospan, “GeoVista USA,” <http://www.geospan.com/ourmission.asp>.

⁷¹ Pictometry, <http://www.pictometry.com>.

⁷² Scott Hill, Vice President, Pictometry, interview by author, 100 Town Centre Drive, Henrietta, NY, December 13, 2011.

5. **Most oblique images of any company**
6. **Meta-data**
 - a. **Positional Quality** (exact GPS locations)
 - b. **Quality of Tool Sets** (measurements - distance/height/etc.)

Pictometry achieves tactical high-end quality through a fleet of 60 airplanes outfitted with their proprietary image-capturing apparatus. Their equipment records multiple images of every square foot that the plane flies over at a level of 2,500 feet above the ground. That information enters a database where software extracts the interconnected images with tools to provide measurement (length—width—height) and manipulate data.⁷³

For public safety applications, **Pictometry** appears to provide the most tailored solutions to addressing the geospatial issues encountered in emergency response. Their priority to capture “leaf-off” images allows for better terrain identification and analysis, more precise topographical mapping with LIDAR imagery, and more accurate measurement of land-based objects due to less obstruction from vegetation. Readily identifiable road, trails, ravines, landmarks, and waterways allows for safer and more reliable tactical planning. Access and evacuation routes, points of cover and concealment, assets and liabilities can all be easily identified by dispatchers and responding units. To prevent officers or civilians from being placed in harm’s way, strategic planning can be remotely conducted.

Pictometry is a locally-based corporation (Rochester, New York) that currently contracts with the county government (Monroe County) to provide GIS and mapping capabilities for the Department of Engineering, Board of Elections, Department of Environmental Services, the Assessor’s Office, and all of the needs of the respective city, towns, and villages within the county.

A new service now becoming available to customers is **Pictometry On Line** (POL), providing essentially the entire suite of software, images and tools via the

⁷³ Rochester Business Journal, “Pictometry,” <http://www.rbj.net/article.asp?aID=188092>.

internet. By merely placing the computer cursor at any point on the electronic map of the county, an oblique photographic image of that particular location appears. The image and corresponding GIS data can be displayed and manipulated. Tools providing geospatial measurements (length, width, height, pitch, and distance) are available for strategic planning. Photos, planning tools, graphs, and marker icons can be embedded into the images to establish points of reference.⁷⁴

The county government has purchased the aerial images of the region. The local municipalities have access to the images free of charge.⁷⁵ There are plans in place to equip the police, fire, and EMS mobile computer terminals with “Verizon Air Card” technology to provide internet access and support to the Computer Aided Dispatch (CAD) system.⁷⁶ With the addition of **Pictometry On-Line** (POL), responding emergency services personnel and partnering agencies will be able to share photographic images, geospatial data, and mapping information while responding to emergency scenes. Having access to such information while in transit will improve coordination, speed, and accuracy of response. These technological advancements also enhance situational awareness and tactical planning when managing and mitigating critical incidents.

Although, Monroe County and the agencies within the greater Rochester, New York area have access to resources through **Pictometry**, as the company headquarters is located in the vicinity, other communities throughout the nation have advanced in the use of automated inventory and managements systems through the Department of Homeland Security—Office of Infrastructure Protection.

⁷⁴ James Marchetti, Pictometry, interview by author, 100 Towne Centre Drive, Henrietta, NY, December 13, 2011.

⁷⁵ Scott Hill, Vice President, Pictometry, interview by author, 100 Town Centre Drive, Henrietta, NY, December 13, 2011.

⁷⁶ Rich Verdow, Director of Public Safety Communications, County of Monroe, interview by author, Cobbs Hill Radio Center, December 7, 2011.

IV. INFORMATION ACCESS AND MANAGEMENT

A. FIRST RESPONDER ACCESS

In several states, such first responders share critical asset information electronically with the use of automated inventory and management systems. New York and other states actually appear to have lagged behind regarding the use of automated processes involving emergency responders. Many agencies collect and retain critical information in traditional formats (paper maps—blueprints and floor plans—notebook and binders with plans, orders and policies—etc.). Quick and effective information sharing has become progressively more important due to the nature of situations being encountered and the sophistication of the equipment required. The federal government has provided guidelines and automated systems to supported state and local response efforts.

The United States Department of Homeland Security—Office of Infrastructure Protection provides an automated system for state and local governments to inventory and manage critical assets for their communities. The Automated Critical Asset Management System (ACAMS) is a standardized computer network designed to assist emergency response personnel in identifying, categorizing, managing and updating an inventory of critical assets in a particular community. The federal government has designated eighteen (18) critical infrastructure sectors⁷⁷ including:

- Agriculture and Food
- Banking and Finance
- Chemical
- Commercial Facilities
- Communications
- Critical Manufacturing

⁷⁷ United States Government. “Critical Infrastructure Sectors.” Department of Homeland Security Critical Infrastructure. Last modified May 4, 2012. Accessed June 20, 2012. http://www.dhs.gov/files/programs/gc_1189168948944.shtm.

- Dams Defense
- Defense Industrial Base
- Emergency Services
- Energy
- Government Facilities
- Healthcare and Public Health
- Information Technology
- National Monuments and Icons
- Nuclear Reactors, Materials, and Waste
- Postal and Shipping
- Transportation Systems
- Water

No matter which of the aforementioned designated critical infrastructure sectors, ACAMS provides a structured approach to identify key components of the particular system, identifies its relatedness to other components, and offers a structured process to manage and share the information and implement the National Infrastructure Protection Plan (NIPP).⁷⁸

Government officials, emergency managers, and first responders can access critical information related to a particular asset through a secure portal and are able to share such information simultaneously with authorized personnel. The system is designed to capture data pertaining to a particular asset including:

- 1.) Exact address or location of the property
- 2.) Size and layout of the building
- 3.) Police response
- 4.) Fire response
- 5.) EMS response

⁷⁸ United States Government, “Automated Critical Asset Management (ACAMS),” Department of Homeland Security. Last modified May 18, 2012. Accessed June 20, 2012. http://www.dhs.gov/files/programs/gc_1190729724456.shtm.

- 6.) Points of Contact
- 7.) Phone Numbers
- 8.) Visitor Procedures
- 9.) Security Issues
 - a) Alarm systems
 - b) Fencing
 - c) Cameras
 - d) Guard dogs
 - e) Mail screening
- 10.) Emergency Plans
- 11.) Hazardous Materials Inventories
- 12.) Threat History
- 13.) Business Mission
- 14.) Population

*(The criteria are based upon the template developed by the U.S. Department of Homeland Security- Automated Critical Asset Management System—Asset Manager Questionnaire).*⁷⁹

The material is collected via a computerized questionnaire, entered into the system, and stored in a secured virtual “cloud” environment. The types of documentation solicited for inclusion is comprised of photographic images, geographic information systems (GIS) data, electronic maps, hazardous material locations, directories, all hazard response plans, building floor plans, and other pertinent intelligence.

The ability to access and share such critical information during crises is essential in order to effectively address and mitigate specific situational emergencies. To remotely access the secured information, first responders need only to receive the appropriate authorization, provided by the controlling entity of the particular building, structure or location. Such information can be shared by the authorized agencies while en route to the

⁷⁹ United States Department of Homeland Security, comp. *Automated Critical Asset Management System (ACAMS) Asset Manager Questionnaire (AMQ)*. Washington, DC: U.S. Government, 2012.

scene in order to formulate a response strategy, ensure safe access to the scene, coordinate required equipment, identify assets and liabilities, enhance personnel safety, and promote situational awareness.

The ACAMS format is, however, rather cumbersome and time consuming to initially generate and update. Many of the fields contained in the computer program are confusing to the input operator and not “user friendly.” The amount of time required to complete the forms is substantial. The technical support and resources provided by the state and federal governments are limited. Adequately and properly processing an asset into the system may take a protracted period to schedule both state and federal personnel to respond with photographic and scene processing support.⁸⁰

After a thorough review of the forms and related procedures, research was conducted to determine whether the private sector provided comparable capabilities to aid businesses with data collection and similar services as that provided by the Department of Homeland Security. Several companies provide programs that incorporate similar basic concepts and processes as the ACAMS Program.

The primary business structure of these companies revolves around aerial photography and related services. Each agency incorporates their primary service (orthographic photography) with other features including secure data storage. These private sector vendors will provide staff to process the structure with photographic images including aerial (orthographic and oblique), street level, and building interior and exterior photographs. Depending upon agency budget concerns, technical support staff will train customers to properly photograph the interior of building. The photographs are then electronically “stitched” together to create a 360 degree panoramic view of the particular room. The individual photographs of each room are then incorporated into a GIS mapping overlay of the building. The mapping feature allows responding police, fire, and EMS personnel to remotely access the images.

⁸⁰ United States Department of Homeland Security, comp. *Automated Critical Asset Management System (ACAMS) Asset Manager Questionnaire (AMQ)*. Washington, DC: U.S. Government, 2012.

The products offered by the private vendors provide a platform to share information remotely with participating agencies similar to those established by the federal government. Using the protocols created by the Department of Homeland Security (ACAMS) and utilizing local resources to process certain building established as priorities for implementing protective strategies, can also provide for a similar capability for sharing vital information. The “360 degree” panoramic image camera equipment can be purchased or leased, or loaned and shared with local agencies to process the district building contained within their respective jurisdictions.⁸¹ These photographs can be stored and incorporated with publically accessed “Google Earth” or “Bing” images to provide similar capabilities to those companies in the private sector.

The United States Department of Homeland Security—Office of Infrastructure Protection provides the ACAMS Program and support to local government agencies at no additional cost to those communities.⁸² However, for a locality to individually establish priorities and compete with other jurisdictions for access to a limited labor pool at the state and federal level may hamper effectiveness and prove challenging to a municipality interested in processing multiple critical infrastructures in a short period of time.

Exploring new opportunities and establishing a pilot program to train local staff and first responders as to the inner working of the ACAMS system, and then using those procedures to process other buildings and critical infrastructure, may prove to be more efficient and cost effective for accomplishing a similar outcome.

Depending upon the financial capabilities of a community and the availability of staff to conduct the technical processing, a determination can be made as to the feasibility of using public sector staff and equipment or to rely on private sector resources. The decision to engage assistance from a private corporation or to dedicate government

⁸¹ Mark W. Kreyer, DHS Automated Critical Asset Management System. Interview by the author, 130 Plymouth Avenue South, Rochester, NY. March 15, 2012.

⁸² United States Government. “Automated Critical Asset Management (ACAMS).” Department of Homeland Security. Last modified May 18, 2012. Accessed June 20, 2012, http://www.dhs.gov/files/programs/gc_1190729724456.shtm.

employees to address the required tasks must be evaluated based on the time, effort, cost and commitment of personnel to complete the designated project.

Considering multi-disciplinary options provide various graduated approaches that can result in comparable desired outcomes with potential cost efficiencies. Contracting with private sector vendors, utilizing the services of the federal government, or in this particular situation, retrieving publically accessed mapping and incorporating locally developed photographs and GIS information, will achieve similar capability for use by local first responders to attain geospatial accuracy and improved situational awareness. The determination as to the most appropriate approach for selecting a particular technologic strategy should be based upon funding, staff availability, and strategic timeframes for implementation.

Although various options are available, multi-disciplinary approaches provide new opportunities and may improve operational effectiveness. Based upon more recent situations involving armed attacks and acts of violence on school properties, the need for adequate preparation by school districts and first responders is evident.

V. COMPARATIVE ANALYSIS / BEST PRACTICES

A. THE NEED FOR PREPARATION

April 20, 1999, in the suburban town of Littleton, Colorado, two high school seniors conducted an armed assault on the Columbine High School. Dylan Klebold and Eric Harris planned to kill hundreds of their fellow students with an array guns, knives and bombs (nearly 100 explosive devises) during the middle of the school day. The two students had studied the traffic patterns and congregation points within the school. They wanted to maximize their efforts and kill as many people as possible. They intended to detonate propane bombs in the cafeteria at approximately 11:15 a.m., when an estimated 500 students would arrive for the first lunch period of the day. It was their intent to gun down any survivors of the blast who attempted to exit the cafeteria. When the initial detonations in the cafeteria did not occur, the boys decided to enter the school brandishing an assortment of weapons (two shotguns, a rifle and a semi-automatic handgun) and open fire on classmates and teachers. A pipe bomb, used as a distraction for responding police, did detonate as planned at approximately 11:20 a.m.⁸³

The initial police response, within minutes of the beginning of the siege, resulted in an exchange of gunfire between Harris and the police officer. Neither was injured and the police officer took cover while Harris and Klebold entered the school. A standard police response commenced by securing the perimeter, attempt to confirm circumstances and identify whether there are any injuries and activate the Special Weapons and Tactic Unit for a potential hostage situation. The traditional philosophy was that once the perimeter was secured and the situation was “contained” the negotiation process could begin. The philosophy was “at that point time was on our side.” The difference with this situation was that the suspects continued to detonate explosive devices and actively shoot students within the high school.

⁸³ *20th Century History* (About.com., 2012), s.v. “Columbine Massacre,” by Jennifer Rosenberg, accessed May 19, 2012, http://history1990s.about.com/od/famouscrimesscandals/a/columbine_4.htm, 1–2.

Klebold and Harris threw 76 bombs (30 detonated and 46 did not explode) during the 47-minute murderous rampage. They fired 188 rounds of ammunition, killing twelve students and one teacher before committing suicide.⁸⁴ Since there were no witnesses to the suicide, the standard police procedures and protocols continued while victims lay injured and dying. Entry into the building was delayed until the S.W.A.T. Unit could conduct a safe room-to-room search. Individuals apparently perished due to the delay of the police officers and S.W.A.T. members to aggressively enter the building and mitigate the situation.

B. CHANGE IN TRAINING AND TACTICAL RESPONSE

The armed student attack on April 20, 1999, at Columbine High School, in Littleton, Colorado, dramatically changed the way people viewed the safety of their child at school, which completely altered police protocols and training with regard to “active shooter” situations. Police agencies, in both the United States and Canada, reference this incident at Columbine High School as one of the primary reasons for needing to develop different procedures and strategies for responding to and preparing for active shooter situations and other types violence in schools.

Traditionally, standard police procedures and S.W.A.T. Unit tactical response were developed with the concept that once a scene was contained, time was on the side of the authorities. Obtaining floor plans, developing strategies, identifying assets, determining liabilities and other issues could all be achieved once an inner safety perimeter was established, and resources were on the way to the scene.

Due to the “active shooting,” that was occurring at Columbine High School, and with lives being lost while the police officers stood patiently at the scene developing plans and strategies, the tragic outcome prompted a review of the current practices. Considering the range of potential loss and damage associated with such a situation, the plan and strategies required significant changes in order to reduce any negative impact

⁸⁴ *20th Century History* (About.com., 2012), s.v. “Columbine Massacre,” by Jennifer Rosenberg, accessed May 19, 2012, http://history1990s.about.com/od/famouscrimesscandals/a/columbine_4.htm. 4.

and enhance safety for everyone using the school property. Besides targeted attacks, schools are also vulnerable to challenges from natural disasters as parents leave their children in the care of school officials with the expectation that school staff will protect them during their absence. Over 53 million children attend either school or day care in the United States. That number represents nearly 20 percent of the total U.S. population. Since school officials have a special responsibility for the children placed in their care, schools act *in loco parentis*. They are held responsible for children's safety and supervision until those children are returned to their families.⁸⁵ Schools do not merely educate young people. These educational institutions administer health care to students and are, on a daily basis, responsible for feeding large numbers of individuals at one setting. The mere number of young people in a school building on a daily basis poses a considerable vulnerability from threats and disasters.

C. COMPARATIVE ANALYSIS OF GOVERNMENTAL STRUCTURE

Although the two countries share significant borders, land-based and maritime, the policing structure and government configuration differ in certain areas. Comparing a more centralized approach in Canada, similar to the United Kingdom, to a decentralized approach (United States) appears to have to do more with the governing principles of the countries. Canada has more national coordination and a supportive culture⁸⁶, as Canada has a national police force with the Royal Canadian Mounted Police (RCMP) endowed with local and federal policing authority. The U.S. resists federal authority in policing efforts by pushing control down to the states for establishing and enforcing legal statutes at that level. The Constitution and the culture of the United States encourage the decentralization of authority and reduction of control by the federal government.

The Royal Canadian Mounted Police (RCMP) is a national police agency serving the entire country of Canada. The members have peace officer status throughout the entire nation and enforce federal issues and any situation that would have any national

⁸⁵ Dictionary.com. *Merriam-Webster's Dictionary of Law*. Merriam-Webster, Inc., accessed September 23, 2011, [http://dictionary.reference.com/browse/in loco parentis](http://dictionary.reference.com/browse/in%20loco%20parentis).

⁸⁶ Nadav Morag, *Comparative Homeland Security Global Lessons*, John Wiley & Sons, Inc. 2011.

implications, very similar to the operational guidelines of the Federal Bureau of Investigation (FBI) in the United States. The RCMP does provide routine provincial policing to the provinces that have contracts with the agency for such services. The provinces of:

1. Alberta
2. British Columbia
3. Manitoba
4. New Brunswick
5. Newfoundland and Labrador
6. Nova Scotia
7. Prince Edward Island
8. Saskatchewan

These provinces receive a full array of policing, crime prevention, investigative and forensic services comparable to those services provided by village, town, city, county and some state police agencies in the United States.⁸⁷

The RCMP only provides federal law enforcement services to the provinces of Ontario and Quebec, as they have their own provincial police forces. They (the RCMP) will address any situation that has national implications that would bring it under their authority; otherwise, the communities rely on the provincial police forces for routine police services.⁸⁸

D. CANADIAN APPROACH TO EMERGENCY RESPONSE TO SCHOOLS

Throughout the country, the Canadian Government addresses the issues of Emergency Planning and Threats to School Safety through the RCMP; however, in the Province of Quebec and Province of Ontario the services are delivered through the provincial and local police. Every school is expected to develop an Emergency and Crisis

⁸⁷ Stu Leach, Corporal, Royal Canadian Mounted Police, interview by author, via telephone at RCMP Ottawa, Canada, May 9, 2012.

⁸⁸ Ibid.

Response Plan, which must include a lockdown plan, procedures following a lockdown and other emergencies, while complying with the school board and the Ministry of Education policies. These protocols also suggest that teachers, staff, parents and students should be included in the development and monitoring of the plan. The mechanism for sharing the plan with the police must be identified and specified in the protocols.⁸⁹

The RCMP developed a Lockdown Procedure Information package that shares the best practices with law enforcement personnel and educators in order to assist in developing and implementing functional school plans for serious situations including, armed intruders, dangerous wild animals near the school, or hazardous material spill. The procedural information includes the different types of lockdown protocols including a format (*Hold and Secure*) for when it is desirable to secure the school due to an emergency occurring outside and not related to the school. The other format (*Shelter in Place*) for when personal safety is considered to be in danger if anyone leaves the school.⁹⁰ Locking down a school quickly maximizes the safety of teachers and students reducing confusion and distractions for responding officers.

In the provinces for which the RCMP does not provide the primary community policing, the Provincial Ministry of Education, school boards and police services across the province work in partnership to create safe school environments and to prepare in the event of school violence. The Ontario Association of Chiefs of Police (OACP) has developed Guidelines for Developing and Maintaining Lockdown Procedures for Elementary and Secondary Schools in Ontario. The document notes: “Based on lockdown procedures that have already been established in many Ontario schools, the following guidelines are being provided to help elementary and secondary schools ensure their lockdown plans meet basic requirements and to ensure a degree of consistency across Ontario. While much of what is provided will be termed “Effective Practices,” there are

⁸⁹ Ontario Province, *Provincial Model for a Local Police/School Board Protocol* (Ottawa Canada: Government of Canada, Ministry of Education, 2011) 22.

⁹⁰ Royal Canadian Mounted Police, *Lockdown Procedure Information Package*, (Ottawa Canada: Government of Canada, 2012) 3–4.

two key elements, which the Ontario Association of Chiefs of Police (OACP) is recommending as mandatory requirements by the Ministry of Education.

1. Mandatory Requirements

1. All publicly funded school boards in Ontario must establish a lockdown policy to ensure the development and implementation of individual school plans; and
2. A minimum of two (2) lockdown drills must occur during each school year.”⁹¹

The above mentioned guidelines and requirements appear to mirror the school safety programs and lockdown procedures implemented by the RCMP in other portions of the country and would incorporate well with the other emergency plans and protocols utilized by the RCMP.

The RCMP School Action for Emergencies (*SAFE*) Plan is a national computer database released in 2007, which provides access to Police Emergency Response Plans and School “Lockdown” plans. Police officers have identified the need for an effective process for planning, support, and responding uniformly to serious school incidents. It is an “all hazards” plan that provides instant access to tactical police data, building floor plans, and digital photographs (including aerial photographs). Building features (Fire alarms, electrical plans, common areas, and hazards) and suggested staging areas (student evacuation, media staging, parent response gathering, etc.) are included in the database. Members of the RCMP, municipal and provincial law enforcement officers are the only agencies that can access the SAFE Plan, as it contains protected and confidential information.⁹²

The RCMP Lockdown Procedure Information Package in conjunction with the SAFE Plan provides suggestions to improve situational awareness and instructions for

⁹¹ Ontario Province, Ontario Association of Chiefs of Police, Ontario Ministry of Education, *Guidelines for Developing and Maintaining Lockdown Procedures for Elementary and Secondary Schools in Ontario* (Ontario Canada: Ministry of Education, December 2008) 1.

⁹² Stu Leach, Corporal, Royal Canadian Mounted Police, interview by author, via telephone at RCMP Ottawa, Canada, May 9, 2012.

coordination and collaboration with police, fire and EMS personnel. The procedural recommendations and awareness ideas include:

- window coverings
- door locks
- target rich environments (cafeteria, gym library, common areas)
- washrooms (no locks – dangerous areas)
- classrooms (turn off lights—make it look uninhabited)

The ultimate goal of the SAFE Program is prevention. Schools, together with their local police partners, should strongly consider the development of school board threat risk assessment protocols, and other issues are; bullying prevention initiatives, internet safety presentations, social media monitoring, school access control issues, and student crime stoppers initiatives.⁹³

E. UNITED STATES APPROACH TO EMERGENCY RESPONSE TO SCHOOLS

In the United States, the federal government, through the Department of Homeland Security National Infrastructure Protection Plan (NIPP) provides a structured and coordinated approach to establish national priorities and requirements for protecting critical infrastructure. The plan assesses risk as a function of threat, vulnerability and consequence. However, because the federal government did not specifically identify schools as a critical infrastructure, schools did not receive the focus for specific uniform and specialized planning for their particular needs. Grant funding for safety and security planning was directed to “identified” critical infrastructures in other areas of the public and private sectors.

The designated eighteen (18) critical infrastructure sectors⁹⁴ encompassing business, services, facilities and functions in both the public and private sectors.

⁹³ Royal Canadian Mounted Police, *Lockdown Procedure Information Package*, (Ottawa Canada: Government of Canada, 2012) 15.

⁹⁴ U.S. Department of Homeland Security, *Automated Critical Asset Management System*, accessed May 21, 2012, http://www.dhs.gov/files/programs/gc_1189168948944.shtm.

Although schools not specifically included in the list of designated critical infrastructure sectors, the three elements of the Department of Homeland Security model can be applied as follows:

Assessing Risk: Identifying the hazards that could potentially affect a school or that make a school more susceptible to hazards and how likely it is that each hazard could occur. For schools, this could include a variety of natural (e.g., hurricane, earthquake, wildfire, flood, tornado) or man-made (e.g., chemical spill, active shooter, arson, etc.) hazards.

Assessing Vulnerabilities: Determining the characteristics of a school that are susceptible to hazards. Such assessments identify areas of weakness that could result in a variety of undesirable consequences for the school and the community. For schools, this could include elements of a school's structure, procedures, equipment, systems, grounds, surroundings, etc.

Assessing Consequence: Measuring the range of loss or damage that could occur from the impact of an incident. For schools, this could include, but not limited to, the disruption of the social and physical learning environment – whether short or long term – and subsequent psychological impact on the school community, the community at large, public confidence and morale, and potential economic impacts.⁹⁵

Vulnerability assessments are an essential component of emergency management and planning. By determining which hazards pose the most risk, schools can work with partners to identify, prevent and correct problems and potential threats. Similar to the Ministry of Education approach in Canada of inviting teachers, staff, parents and students to be a part of assessment process, the U.S. Department of Education provides an expanded listing of individuals for consideration for input and involvement. They suggest that schools and districts may wish to survey students and family members as a part of the assessment process instead of having them serve as vulnerability assessment team members.⁹⁶ The Canadian Ministry of Education does, however, identify the most direct and vital components to be considered as a part of the assessment process and does not preclude others from being involved.

⁹⁵ U.S. Department of Education, *A Guide to School Vulnerability Assessment*, (Washington, DC: U.S. Government Printing, 2008), 6.

⁹⁶ Ibid. 10–12.

Every school is different and requires its own unique approach. There are certain fundamental issues that each school should consider when conducting an assessment:

- Control of access and egress
- Traffic flow (bus, car, and pedestrian)
- Identification procedures for entry and exit
- Safe interior and exterior facilities
- Visibility interior and exterior
- Evacuation route and congregation points
- Communication systems (including alarms, surveillance equipment)
- Identification of an established incident command system (ICS)
- Inventory of emergency supplies
- Staff and student knowledge of emergency procedures
- Shelter-in-place locations and protocols

The above noted issues are applicable to nearly every school district in the country.⁹⁷

Although, the school evaluation, assessment and planning processes are very extensive, problems occur in the application and coordination phase of the program. Due to the large number of police agencies throughout the United States and the varying levels of size, sophistication, and administrative oversight in place in each of the organizations; there is a tremendous lack of consistency. Many agencies do not have the staff available to provide administrative supervision to the program or the financial wherewithal to dedicate. Because each agency must independently assign staff and administrative oversight, the duplication of effort becomes cumbersome and expensive.

⁹⁷ U.S. Department of Education, *A Guide to School Vulnerability Assessment*, (Washington, DC: U.S. Government Printing, 2008), 22.

F. COMPARATIVE ANALYSIS OF THE PROGRAMS (UNITED STATES AND CANADA)

The plans, training, and protocols established by the Royal Canadian Mounted Police are supported by the information provided by the Ministry of Education. These plans and procedures achieve a comparable standard with that of the U.S. Department of Education.

The School Lockdown Presentation developed by the RCMP as a part of the School Action for Emergencies (SAFE) provides training and insights regarding:

- School shootings (societal issues)
- Media and video game violence
- Columbine “Catalyst for Action”
- Incident command and coordination
- Prevention and intervention strategies
- School access and control issues
- Dynamics or targeted school violence
- Social media
- School lockdown planning for educators
- Active Shooter issues
- Command Post Operations
- School alerts & colour coding
- Sheltering Areas
- Emergency training and drills

The above topics are in detail in the “School Lockdown Presentation” lecture.⁹⁸

In comparison to the SAFE Plan developed by the RCMP, the United States Department of Homeland Security—Office of Infrastructure Protection provides an automated system for state and local governments to inventory and manage critical assets

⁹⁸ Royal Canadian Mounted Police, *School Lockdown Presentation PowerPoint Presentation*, (Ottawa Canada: Government of Canada through Shutterstock.com , 2012).

for their communities. The Automated Critical Asset Management System (ACAMS) is a standardized computer network designed to assist emergency response personnel in identifying, categorizing, managing and updating an inventory of critical assets in a particular community. No matter which of the seventeen (17) designated critical infrastructure sectors, ACAMS provides a specified approach to identify key components of the particular system, identifies its relatedness to other components, and offers a structured process to manage and share the information.

The information collection process of the ACAMS system is extremely cumbersome and time consuming to use. Assistance provided by the U.S. Department of Homeland Security, and its local counterparts, is minimal. The RCMP SAFE Plan is fully supported by their police officials, and they dedicate staff to support information entry and facility processing. The RCMP has approximately 5000 schools within their jurisdiction and 1494 dedicated SAFE Plan Coordinators, and they currently have nearly 3000 SAFE Plans completed and recorded in the national database.

Both the SAFE Plan and ACAMS are designed to capture data pertaining to a particular asset. The material is collected, entered into the respective system, and stored in a secured virtual “cloud” environment. The types of documentation solicited for inclusion is comprised of photographic images, geographic information systems (GIS) data, electronic maps, hazardous material locations, directories, all hazard response plans, building floor plans, and other pertinent intelligence.⁹⁹

The ability to access and share such critical information during crises is essential in order to effectively address and mitigate specific situational emergencies. Such information can be shared other agencies while en route to the scene in order to formulate a response strategy, ensure safe access to the scene, coordinate required equipment, identify assets and liabilities, enhance personnel safety, and promote situational awareness.¹⁰⁰

⁹⁹ John McNamara, New York State Office of Counter Terrorism Critical Infrastructure Unit, personal interview by author, 130 Plymouth Avenue South, Rochester, NY, March 15, 2012.

¹⁰⁰ Mark W. Kreyer, Protective Security Advisor-Buffalo District, U.S. Department of Homeland Security, personal interview by author, 130 Plymouth Avenue South, Rochester, NY, March 15, 2012.

Comparing the two approaches, provides an opportunity to analyze what components work effectively and could be applied in the United States. The Canadian model provided through the services of the RCMP achieves a uniform approach with a standardized provision of response services through this one police agency. The RCMP and its staff provide support to jurisdictions interested in be included in the system. Planning, organizational management, and control are more federalized as the guidelines and formats are developed through the Ministry of Education, formatted through the federal police force, and then shared with local and provincial agencies where needed in Ontario and Quebec Provinces. A coordination gap occurs with regard to the information sharing with the fire service and emergency medical providers. The SAFE System is only accessible to police agencies. The plans and information stored in the system would be beneficial for planning and emergency service provision for the other first responders.

The United States model, when used, collects an extensive amount of information in the ACAMS questionnaire process and shares the entire database with any designated first responder. The information can be used for planning, program development, and strategic response. The system can accommodate all electronic data for storage and retrieval and can be accessed remotely. The Department of Homeland Security and the Department of Education both provide guidelines and formatted processes for use in emergencies; the problems appear to develop at lower governmental levels. Gaps in coordination appear to occur based on the extensive number of individual police agencies responsible for school safety and security in the U.S. and due to the limited use of the system. Although most school districts have an emergency plan in place, the information is not necessarily in an electronic format and many agencies and jurisdictions do not use the ACAMS process with such a cumbersome and exhaustive information collection process.

G. PROGRAMMATIC EVALUATION AND CONCLUSIONS

It is an unnerving situation when police officers respond to a school attack committed by students. The level of confusion and panic is overwhelming and merely locating or even just trying to identify the attackers can be a significant problem.

Planning, training and testing with formalized drills are essential to ensure that teachers, students, and emergency responders are prepared to address such crises.

“Our school children are at risk from both angry students and determined terrorists. After the Columbine High School attack of 1999, many police agencies adopted and trained some form of “Rapid Deployment” tactic for responding to active shooter. But, with lack of use and the memory fade induced by time, many departments have allowed their “edge” to become dull. We must program school protection permanently into our emergency response hard drives.”¹⁰¹

Since that tragic situation on April 20, 1999, police agencies and school districts throughout the United States and Canada have diligently reviewed the actions taken in that incident and other school-based attacks conducted in both countries. “The attack on Columbine High School highlights the challenges and complexities that face emergency providers when participating in large scale multi-agency responses. In this era of domestic preparedness and homeland security, the lessons learned at Columbine take on even greater importance.”¹⁰² Dramatic changes have been made in prevention, planning, training, response, mitigation, and recovery efforts with respect to such crisis situations. Collaboration and coordination of police, fire, emergency medical services personnel, school administrative staff, teachers, school security, students and parents have presumably developed resiliency from falling victim to these “unexpected” situations.

The national policing coverage of the RCMP provides a unique opportunity to ensure uniformity in the application of procedures regarding school safety planning, protocols, and training in Canada. In comparison, the DHS (through NIMS and the NIPP) provide guidelines to the state and local police, fire and EMS agencies to encourage uniformity in the application of the ACAMS Program and response protocols in the United States.

¹⁰¹ Richard Fairburn and David Grossman, “Preparing for School Attacks,” *The Police Marksman*, November–December 2006, 1.

¹⁰² Howard K. Mell, MD, MPH and M. D. Sztajnkrzyer, MD, PhD. “EMS Response to Columbine: Lesson Learned,” *Internet Journal of Rescue and Disaster Medicine* 5, no.1 (2005). Accessed May 20, 2012, <http://www.ispub.com/journal/the-internet-journal-of-rescue-and-disaster-medicine/volume-5-number-1/ems-response-to-columbine-lessons-learned.html>.

The RCMP training and information database also incorporates the Active Shooter Program developed by the Peel Regional Police Agency, the school lockdown plan developed in cooperation with the Ontario Provincial Police (OPP), Peel Regional Police, and the RCMP. The school lockdown plan suggests two lockdown drills be conducted every year by participating schools.

H. BEST PRACTICES IDENTIFIED/RECOMMENDED

In considering a best practice for applying safety programs for school districts, recognizing the decentralized concepts of policing structures and the independent nature of state governments, the thought of merely implementing the nationalized programs from Canada would be impractical and counter to the governmental structure in the United States. However, there should be an attempt to standardize the collection and sharing of information from community to community. Adopting the basic principles of the RCMP SAFE Program (the use and storage of: aerial images, interior photographs, mapping, etc.), and a uniform application of policing practices from one jurisdiction to another would increase efficiency in tactical response. A similar nationwide consistency in the delivery of school safety programs, as provided by the RCMP for Canada, can fundamentally be achieved in the United States. The U.S. Department of Education and the U.S. Department of Homeland Security would merely need to require that all state and local governments establish strict guidelines to achieve uniformity in police operational planning for school safety programs and tie those requirements to the application process for grants and other funding sources. Establishing such guidelines would create essentially the same functionality as a federalized policing structure and ensure that mutual aid from neighboring communities could seamlessly be achieved. These administrative and operational changes would greatly enhance safety on school properties in the United States.

Effectiveness would also be enhanced by confirming that all police agencies use the ACAMS Program or a similar system, to that of the RCMP SAFE Program, and providing secured access to all of the stored information available for every emergency first responder. The uniform application of an “Immediate Action Rapid Deployment

(IARD)” or other strategies to address “active shooter” situations and standardized “Lockdown Procedures and Protocols” comparable to those developed by the RCMP would increase the efficacy of the responding police agencies within the borders of the United States. The mutual sharing, of the geospatial information and critical assets data with the members of these multiple first responder disciplines, promotes safety for everyone involved.

Information sharing is not only beneficial among members of law enforcement, fire service staff and emergency medical personnel, engaging the community residents in providing and accessing data works to improve the efficiency of each respective service provider by enhancing situational awareness.

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VI. PUBLIC / PRIVATE PARTNERSHIPS

A. COLLABORATIVE MESSAGING STRATEGIES

Public notification, engagement and coordinated response to emergencies have been a perplexing issue facing local police, fire and EMS officials. For more than a century, the public has relied upon telephone landline technology as the backbone of emergency communication and dispatch centers throughout the United States. Large scale disaster situations (9/11 Attacks, Katrina Storm, and other natural and man-made incidents) have over taxed the system and created communication challenges not only for friends and family members of victims, but also the emergency response community.

A massive influx of telephone calls utilizing both cellular and landline technology paralyzes system capabilities and prohibits communication. As an example, areas that were affected by the 2011 east coast earthquake frequently experienced the inability to communicate. This phenomenon was also evident on 9/11 as radio transmissions, cellular capabilities, landline telephone calls, satellite reception and other forms of communication were all essentially crippled at “Ground Zero” in the aftermath of the September 11, 2001 attack in New York City. Police officers, firefighters, and EMS personnel were unable to communicate with their dispatchers, other emergency services providers, or the public in general.

On a much smaller scale, any situation occurring at a primary or secondary school, or other educational facility typically results in similar challenges when threats or emergencies are reported. Parents, friends, and family members of the students usually want to receive information quickly and directly to ensure the safety of their loved ones. As a result, the flood of incoming calls rapidly overruns standard communication systems. Local communication is also affected for government officials and other individuals seeking information and instructions. When those telecommunications break down, often people’s first instinct is to respond to the site of the threat or emergency. Such actions subsequently cause additional challenges for first responders and other resources attempting to access the scene, as available entry routes are obstructed by

vehicular traffic congestion. As a result, reliance on standard government systems and processes for communication needs have resulted in frustrating and potentially dangerous outcomes.

Terrorist and others who threaten public safety have realized these vulnerabilities apparent in traditional communications systems. Aging and exposed landline networks are also easily compromised and damaged by physical attack. Developing alternative approaches to support crisis communications utilizing existing technology is essential to provide a sustainable and cost effective solution.

B. STRATEGIES TO IMPROVE COMMUNICATIONS

Public safety professionals are realizing that relying on previously established and secured communication systems is rapidly becoming inefficient and ineffective. Alternative strategies should be employed to improve emergency communications—especially in educational environments where sending accurate information out quickly to a target audience (student’s, school administrators, parents, etc.) will enable emergency plans such as shelter in place to be implemented. Using new technologies allows the U.S. to build more efficient and effective communication strategies that will in turn build public resiliency and lead to a higher level of public engagement. Social media, including Facebook, Twitter, and the use of computer-aided systems for mass notification, provide a better means of reaching the public.

C. SOCIAL MEDIA

Even during nonemergency situations, “People live busy lives and want information at their fingertips. They do not have the patience to sit idle and wait to hear something that applies to them.”¹⁰³ Private sector businesses and the public in general have relied upon social media to quickly and effectively communicate and share information. The proliferation of social media Internet sites is astounding; Facebook

¹⁰³ Laurie Van Leuven, “2007 Southern California Wildfires Case Study,” CHDS Moodle, 6.

alone has over 500 million subscribers, with 1 billion projected by 2013.¹⁰⁴ Social media platforms have been designed to be easily customized and expanded to accommodate particular needs and applications. Citizens are utilizing social media to expedite and augment their communication needs. We are beginning a trend to no longer rely solely on “old fashion” telecommunication significant numbers of people are transitioning to visually enhanced forms of interaction with “Skype” and other forms of video communication.

Over the past five years, social media have impacted emergency management and disaster response in numerous ways. The emergency management professional must begin to accept this impact not as an arbitrary consequence of an uncontrolled disaster, but rather as a tool to help coordinate, manage and facilitate a safe and expected response during emergencies and disasters.¹⁰⁵

Social media, such as Facebook and Twitter, should be incorporated into media communication strategies. Customers can choose to receive notifications of emergencies or other current information that will help them stay informed. “The Internet and social networking sites provide more flexibility than traditional sources for emergency information. The Internet provides a searchable, customizable mechanism for the user.”¹⁰⁶

Laurie Van Leuven examined the use of social media to disseminate information during a California wildfire and found that “Twitter proved to be an appropriate medium since it generated small contextual updates to existing stories. From a workflow perspective, the RSS Twitter feed made perfect sense since it did a lot of the footwork keeping the public informed.”¹⁰⁷

¹⁰⁴ Bart Perkins, “Social Media to the Rescue,” *Computer World*, September 13, 2010, 16.

¹⁰⁵ Adam Crowe, “The Social Media Manifesto: A Comprehensive Review of the Impact of Social Media on Emergency Management.” *Journal of Business Continuity & Emergency Planning*, Volume 5, no. 1 (October 2010): 409.

¹⁰⁶ Laurie Van Leuven, “2007 Southern California Wildfires Case Study,” CHDS Moodle, 6.

¹⁰⁷ Ibid.

Despite the growing use of social media challenges remain. First, the technologies selected need to ensure that the end user receives immediate notification so that they have the opportunity to take timely action. Second, there should be a mechanism for the individual end users to transition to sensors and provide situational awareness data back through the system. Finally, technology can fail and in the event of loss of Internet or cellular connectivity, a contingency plan needs to be in place and distributed to end user in advance of an event.

D. HYPER-REACH AND ACCU-REACH

Technologies commonly known as reverse 911 systems use existing landline communication platforms through local telephone service providers that utilize computer-aided systems to notify residents and businesses of emergency and nonemergency situations. *Hyper-Reach* and *Accu-Reach* can be utilized with any active landline customer, and they can distribute information to specifically directed places and people.¹⁰⁸

- *Hyper-Reach* is a notification and voice broadcasting system that allows public safety professionals to deliver a message quickly, effectively and affordably via digital recording.¹⁰⁹
- *Accu-Reach* is a software program that supports the Hyper-Reach system and allows the operators to virtually handpick the target audience for a mass notification broadcast, right down to the neighborhood, street, and house. The result is a cost-effective emergency message broadcasting and calling process that can be used from any monitor connected to the network to conduct broad based notifications to the community-at-large.¹¹⁰

The ability to quickly and precisely target specific individuals and provide vital information allows the public to prepare appropriate protective actions, defense

¹⁰⁸ Cellular telephone subscribers must register their area code and phone number with their respective service provider in order to be included in the notification system.

¹⁰⁹ City of Rochester, Emergency Communications Department, *Hyper-Reach Activation*, Policies and Procedures 07.01.4, (Rochester, NY: City Government Publishing, November 4, 2011).

¹¹⁰ City of Rochester, Emergency Communications Department, *Accu-Reach Activation*, Policies and Procedures 07.01.4, (Rochester, NY: City Government Publishing, November 4, 2011).

strategies, or mitigation efforts. Enhancing situational awareness and providing quality information, not only supports a strategic response, but also strengthens resilience.

Police agencies have successfully used these programs during large-scale emergencies, natural disasters, Special Weapons and Tactics events, Hazardous Device Unit / Bomb Squad calls, and other situations requiring sheltering, evacuation, and strategic planning efforts. Fire Service agencies have utilized this technology during severe storms, wild fires and hazardous materials incidents. This technology can do what would rapidly overwhelm local resources and provide tiered and location specific instruction relative to evacuation, sheltering in place and other critical protective measures. In the absence of this technology, information flow falls back to the news media and the public information outreach efforts of local public safety agencies. If an evacuation is warranted, this technology provides a rapid means of coordinated communication. In the absence of these systems, time consuming and resource intensive door-to-door canvassing of impacted areas remain the only viable solution. These processes can be adapted to primary and secondary school properties and other locations that serve as large gathering points for children and adults.

Keeping people informed and aware of threats and resources available to them is critical to encouraging citizen involvement. Arming residents with appropriate information can dissuade, deter, or disrupt would-be terrorists or criminals from acting by influencing their confidence and causing operational uncertainty by increasing their risk of being observed and detected.¹¹¹

E. FEMA’S INTEGRATED PUBLIC ALERT AND WARNING SYSTEM

In 2006, President George W. Bush signed Executive Order 13407 emphasizing, “It is the policy of the United States to have effective, reliable, integrated, flexible and comprehensive system to alert and warn the American people....and to ensure under all

¹¹¹ Paul K. Davis and Brian Michael Jenkins, *Deterrence and Influence in Counterterrorism –A component in the War on al Qaeda*, Rand National Defense Research Institute, (Santa Monica, CA: RAND, 2002) 17.

conditions the President can communicate with the American people.”¹¹² This presidential action became the genesis for the creation of the Integrated Public Alert and Warning System (IPAWS), which allows for the integration of the nation’s alert and warning infrastructure to assist public safety officials in providing information to the public quickly, accurately and efficiently. The Open Platform for Emergency Networks (IPAWS-OPEN) “Alert Aggregator” is a securely hosted web service that provides the routing of emergency messages from the alerting authorities to the public through a variety of communication pathways including:

- Emergency Alert System (radio and television)
- Commercial Mobile Alert System/ Wireless Emergency Alerts (cellular telephones and mobile devices)
- National Weather Service Dissemination Services
- Internet Services
- Local Systems (siren, digital highway signs, etc.)

The message is delivered through a single portal to multiple communication pathways and the system allows the agency requesting the broadcast to send geo-targeted alerts to capable cellular telephones, even if the cellular voice and data service providers are overloaded.¹¹³

F. IMPLEMENTING NEW COMMUNICATION STRATEGIES

New communication strategies need to be cost effective, as well as efficient. Since Facebook and Twitter are readily available social media outlets, the cost is minimal especially when considering the benefits to first responders and the public. The Hyper-reach and Accu-reach systems are economical because they use the same ANI/ALI

¹¹² Federal Emergency Management Agency (FEMA),” Integrated Public Alert and Warning System (IPAWS),” Emergency Management. Accessed May 15, 2012. <http://www.fema.gov/emergency/ipaws>. 1.

¹¹³ Federal Emergency Management Agency (FEMA),” Integrated Public Alert and Warning System (IPAWS).” *A State Toolkit for Adopting IPAWS*, Emergency Management. Accessed May 15, 2012. <http://www.fema.gov/emergency/ipaws>. 5.

database already in place in existing 9-1-1 communication systems. Costs are calculated by the length of outgoing messages, number of calls, and custom options; outgoing calls are 20 cents or less per minute. “Hyper-Reach requires no investment in hardware or software. If you have a web browser and a telephone, you're set to start.”¹¹⁴

G. MULTI-DISCIPLINARY AND INTER-AGENCY COLLABORATION

An improved communication strategy will have an influence on public awareness and safety and will benefit first responders who can focus on response and recovery better, if they do not have to deal with crowds trying to find out what is happening.

These communication strategies will also make it easier for emergency management agencies to collaborate because they provide the ability to forecast changing environments based on citizen input and “real-time” witness accounts. Social media websites including YouTube, Twitter, Facebook, Google Maps and Flickr can be an incredibly powerful assets to obtain additional witness information to support those individuals responsible for managing crises. Often the information is unverified, incomplete, and periodically imprecise; however, using the power of the crowd or “crowdsourcing” shows a general picture of the situation can be determined with relative accuracy.¹¹⁵

With today’s knowledge and expertise, the information can be synthesized and taken to the next level, as this data can now be integrated with GIS technology. GIS equipment has the ability to capture multiple data sources and layer them on electronic mapping to provide incident managers with interactive situation awareness. In the Commonwealth of Virginia, emergency managers obtain this information through the Virginia Interoperability Picture for Emergency Response (VIPER) system. The VIPER system combines information from social media sites (Flickr, Facebook YouTube, Twitter, and others) with feeds from the National Weather Service, traffic system

¹¹⁴ Hyper-Reach Emergency Notification Services, “FAQs,” 2012 Asher Group. Accessed May 21, 2012. <http://www.hyper-reach.com/emergency/faq.html>.

¹¹⁵ Ed Tobias, “Using Twitter and other social media platforms to provide situational awareness during an incident,” *Journal of Business Continuity & Emergency Planning*, 5, no. 3 (June 2011): 209–210.

cameras, and other sources. VIPER provides the Virginia Emergency Operations Center (VEOC) staff the ability to assess statewide emergency management operations through access to critical information and mapping. The staff can also target isolated situation and remotely evaluate access routes and emergency needs.¹¹⁶

Using social media to support crisis response to primary, secondary or post-secondary schools is becoming a necessity. “As an interactive forum, social media generally run counter to top-down, “official” alert systems that are typically the centerpiece of emergency communications. Even if disaster preparedness teams are skeptical of using social media for life safety, their usefulness cannot be ignored. The Virginia Tech campus shooting was a lesson that even if companies don’t use social media in a crisis, employees will be using them to get their information from other sources.”¹¹⁷

Having access to Smartphone technology through teachers and students within the building during an armed assault, hostage situation, terrorist attack, student uprising, or an active shooter situation at a high school, provides emergency responders (police, fire, emergency medical personnel) the opportunity to more accurately determine:

- The nature of the incident
- Exact location of the situation
- Medical needs if any
- Number and description of suspect(s)
- Type of weapon(s) used if any
- Location of suspects
- Location of victims
- Areas of threat
- Safe and appropriate routes to approach
- Other circumstances or specific information

¹¹⁶ Ed Tobias, “Using Twitter and other social media platforms to provide situational awareness during an incident,” *Journal of Business Continuity & Emergency Planning*, 5, no. 3 (June 2011): 216.

¹¹⁷ Garrett Seivold and Hilary Sloin, “How Social Media are Changing Crisis Communications – For Better and Worse.” *Security Director’s Report* (November 2009): 3.

On-scene witnesses and the information they provide can dramatically improve situational awareness.

Two-way communication capability of current technology is invaluable when applied to such crises. GPS incorporated in currently available cellular equipment provides a capacity to track the location of a specific handheld cellular device. The ability to quickly and accurately locate an individual during a critical situation promotes safety and reduces tedious and expensive search operations. Devices registered with the security personnel at colleges or other educational facilities can be used to disseminate alert messages quickly and efficiently to students, faculty and staff. Text messaging (Short Message Service – SMS) and the use of Twitter, Facebook, Flickr, and other social media platforms can provide instant two-way communication among police, security staff and students. Access to information provides an opportunity to more adequately prepare, build resilience and harden a potential target to the threat of crime or terror.

Mass notification systems that are able to deliver critical messages via many modalities – phone, e-mail, IM, text , visual, and auditory – help ensure that during any emergency, everyone will get the message. If voice channels are congested, a text message may reach its destination. If cellular is overloaded, e-mail should get through. If affected parties are not near a phone or a computer, they might be near a campus cable feed. Or if they're outside, an outdoor siren or enunciator will likely be within range.¹¹⁸

Having additional eyes and ears in the community providing support and information to emergency responders through Instant Messaging, Texting, and Twitter and other platforms, actually become a “force multiplier” for the limited resources of the local police for intelligence gathering and increasing situational awareness.

Advances in wireless telephone technology and new cellular applications allow citizens to interact directly with public and private service providers to share valuable information and increase their understanding of critical needs and strategic planning efforts.

¹¹⁸ Dewitt Latimer, “Viewpoints: Text Messaging as Emergency Communications Superstar? Not so gr8,” EDUCAUSE Review (May–June 2008): 85.

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VII. CELLULAR TECHNOLOGY TO ENHANCE SITUATIONAL AWARENESS

A. HISTORICAL PERSPECTIVE

The telephone essentially has been part of an incremental improvement process since its inception. The device, and its associated support network, has evolved through defined stages and progressively developed to meet the changing demands for new and innovative technology. As Donella Meadows stated in her book, ‘Thinking in Systems,’ “An important function of almost every system is to ensure its own perpetuation.”¹¹⁹

With the recent advances in technology, cellular telephones have become more compact and convenient to carry and use. As the cost to purchase these devices has become more reasonable, the new product development has actually become somewhat of a disruptive technology for traditional landline telephone service, threatening the existence of such landline service, as we have known it. The universal service obligations that guarantee that landline telephone service provided at almost any address, a legal right that many Americans may not even know they have is quietly being legislated away in several states. “AT&T and Verizon, the dominant telephone companies, want to end their 99-year-old universal service obligation known as ‘provider of last resort.’ They say universal landline service is costly and unfair anachronism that is no longer justified because of a competitive market for voice service.”¹²⁰ Many subscribers to landline service have discontinued their contracts and relied solely on cellular telephone service. This change in service processes has disrupted emergency service providers. Emergency communication systems relied on landline numbers for computerized location identification (automated number indicator **ANI** and automated location indicator **ALI**) for dispatcher reference.

¹¹⁹ Donella H. Meadows, *Thinking in Systems* (White River Junction, VT: Chelsea Green Publishing, 2008), 15.

¹²⁰ David Cay Johnston to Reuters newsgroup, “Phone Service for All, No Matter What Kind,” March 28, 2012, accessed August 2, 2012, <http://www.reuters.com/david-cay-johnston/2012/03/28/phone-service-for-all-no-matter-what-kind/>.

Parents have realized the benefits of instant communication with their children, so the proliferation of cellphones carried by students in schools has increased significantly in recent years. Approximately 75 percent of twelve to seventeen-year-olds now own a cell phone, which is up from 45 percent in 2004.¹²¹ The capability to achieve instant communication with friend, family members and associates across the world has become a reality. “Here in the U.S. it is easy to take mobile technology for granted. With every man, woman, and child over the age of 11 carrying a cell phone, mobile access can be more of an annoyance than a technological wonder. Still, for much of the developing world, wireless has leapfrogged landlines. There are only 1.27 billion fixed-line subscriptions globally, but wireless technology has helped connect populations that are unreachable by landlines. In 1990, there were about 14,000 mobile phone subscriptions in Africa, according to the ITU. Today, there are 280 million.”¹²²

B. TECHNOLOGICAL ADVANCEMENTS

Wireless telephone manufacturers have begun to include a significant number of sensors and capabilities into their particular devices. Cameras, video recorders, compasses, accelerometers and global positioning system (GPS) receivers have been integrated with the hardware to enhance the wireless communication capabilities. The processing power of the newer devices has been increased to accommodate the enhanced capabilities provided by these sensors, while delivering essentially instantaneous communication. Smartphones can not only capture acoustic data, photographs, video clips, and other sophisticated information from sensors, that data can be transmitted with GPS coordinates to designated recipients in order to enhance situational awareness.

Throughout educational institutions including primary, secondary and postsecondary, a system called *Blackboard Connect* has been widely used to communicate with student, parents, security professionals, area residents and local first

¹²¹ Amanda Lenhart, “Teens, Cell Phones and Texting,” in *Pew Internet & American Life Project* (Washington, DC: Pew Research Center, 2010), accessed July 22, 2012, <http://pewresearch.org/pubs/1572/teens-cell-phones-text-messages>.

¹²² Dan Costa, “One Cell Phone Per Child,” *PC Magazine*, May 1, 2009, 1–3. Accessed July 19, 2012. <http://www.pcmag.com/article2/0,2817,2344283,00.asp>.

responders. “For any community leader—from K-12 superintendents, to university police chiefs or city mayors—safety and security are of paramount concern. In an urgent situation, *Blackboard Connect* sends out timely safety instructions and situation updates to community members. With Blackboard Connect, leaders can communicate quickly during an unforeseen event.”¹²³ Blackboard Connect provides a wide range of communication channels to reach a particular audience including, recorded voice, text-to-speech, SMS, email, TTY, Facebook, Twitter, RSS, fax, pager, and common alerting protocol (CAP).¹²⁴

The effective use of smartphone cellular technology may be the key to supporting the efforts of first responders in addressing threats and saving lives at critical incidents, terrorist attacks, or hostage situations. The Columbine High School situation in 1999 and other similar incidents may have ended more quickly and less tragically, if the technology of today were available to the first responders and utilized to its potential. The capability of being able to specifically pinpoint the exact location of individual students and teachers within the building would have allowed rescuers to more accurately plan and execute a tactical response.

The current capabilities and availability of smartphones provides an appealing platform to support the efforts of first responders (police officers, emergency medical service providers (EMS), and fire officials) when dealing with situations in primary, secondary and post-secondary school environments. Quick and effective response to critical incidents is often dependent upon receiving thorough and accurate information regarding the particular situation. Critical information for first responders to have access to is the following:

1. the exact location within a facility
2. the number of people involved
3. the capabilities and sophistication of the perpetrators

¹²³ Blackboard Connect, accessed July 28, 2012, <http://www.blackboard.com/Platforms/Connect/Products/Blackboard-Connect.aspx>.

¹²⁴ Ibid.

4. the extent of injuries to victims or damage to facilities

In most threat and hostage situations, one of the more significant obstacles faced by first responders is the inability to communicate directly with victims and suspects at the scene. The perpetrators usually desire to control communication and limit access to and information regarding the victims.

Cellular telephones are ideal devices to infiltrate a secured scene remotely and monitor activities from an audio, visual, and technological perspective. If the cellphones possessed by the students, during critical incidents on school grounds, were capable of being remotely controlled by law enforcement, fire, and EMS officials, valuable intelligence could potentially be obtained to enhance situational awareness, strategic planning, and response efforts. Student telephones with GPS identifiers would provide the capability to locate individuals throughout the building complex. With such enhanced technology, the possibility to monitor activities remotely through cellular technology would provide valuable intelligence by visually confirming:

1. the number and location of suspects
2. type of weaponry
3. location of hostages
4. the nature of injuries and the type of medical attention required
5. the positioning of access routes
6. other information necessary to mitigate the situation

Accessing audio capability would allow the opportunity to monitor suspect plans and strategies and garner valuable information for potential negotiation.

Current cellular and satellite technology already provide many of the basic capabilities required to support such efforts. The Federal Communications Commission (FCC) mandates cellphone manufacturers to provide equipment with particular capabilities (GPS and frequency specifications) in order to be compatible with federal strategies and local law enforcement programming. Equipment is currently available to interrupt cellular telephone transmissions at a designated location in order to temporarily disable communication capabilities. Special Weapons and Tactics Teams, Hostage

Negotiators, and Bomb Squads currently use this equipment in many police agencies. The ability to take control of the features of a wireless phone remotely to support investigations would require further research and technical development.

C. SOPHISTICATION OF APPLICATIONS

A new technology has recently been developed to provide personal security and monitoring. The cellular telephone application was originally developed to provide support for college students and allow parents immediate and uninterrupted access to their children during high stress situations. The software *EmergenSee* allows the client to transmit live video, audio, and their GPS coordinates to predetermined contacts or members of the public safety community. It does not require any effort from the user. The cellphone owner need only to install the application and then simply tap the application icon and then *EmergenSee* technology does the rest. The phone will continue to record video, audio and the specific location in real-time. Emergency first responders are able to view the incident as it develops and to prepare for the situation as they respond. *EmergenSee* is easy to use and has a discreet interface with responders. The information is also simultaneously sent to a secure server, so if a perpetrator breaks the telephone, the transmission is not lost, as any evidence is captured and secured.¹²⁵

EmergenSee has the capabilities to be used not just “victim to responder” but also “responder to responder” to provide inter-organizational communication, so responders can see what other responders are seeing. The back-up units become comparably informed as the initially responding units. The *EmergenSee* application can also send out an alert to registered contacts through texts and emails. The application can create a geo-fence, so every time there is an activation in their particular domain public safety on a campus is immediately alerted.¹²⁶

EmergenSee can also be used in nonemergency situations. The setting “Safe Walk” allows the user to record their video, audio and GPS coordinates while they walk

¹²⁵ EmergenSee Personal Security System, last modified 2012, accessed July 28, 2012, <http://www.emergenseeu.com>.

¹²⁶ Ibid.

from one particular point to another specific location. If the individual does not reach the destination in a designated timeframe, the software sends a text asking if the person has made to the location safely. If the individual does not respond, *EmergenSee* sends the video, audio, and the specific location to the designated contacts or public safety.¹²⁷

D. FUTURE CAPABILITY

Future potential applications of the *EmergenSee* technology is to incorporate applications for use in the Federal Bureau of Investigations (FBI) Central Intelligence Agency (CIA) and the Drug Enforcement Administration (DEA) as undercover agents could transmit live video, audio and location information and effectively gather intelligence without compromising their own safety.

Direct citizen involvement in programs like “See Something, Say Something” would be heightened by providing subscribers the opportunity to report suspicious activity in real-time through *EmergenSee*. This application would enhance the capabilities of 911 Dispatch Centers by including video, texting, audio and GPS to the information base and connect the police, fire personnel, and emergency medical staff with instant information sharing. Including hospital emergency departments simultaneously with video and descriptions from the scene would provide the doctors an opportunity to better prepare treatment response.

Taking the *EmergenSee* concept to the next generation by providing the ability to remotely activate the application, without the assistance of the individual with the device in their possession, would open new possibilities for its use. Missing persons, patients with dementia, or people who are incapacitated or deceased could be located and attended to more quickly. Potential subscribers, including senior citizens, teenagers, and parents, must weigh the family and personal security benefits against the potential for embarrassment and invasion of privacy. Once a thorough evaluation is conducted to

¹²⁷ EmergenSee Personal Security System, last modified 2012, accessed July 28, 2012, <http://www.emergenseeu.com..>

determine whether the benefits outweigh the program detractors, an informed decision can be made as to whether this technology addresses the needs of the particular individual.

The American Civil Liberties Union (ACLU) and other privacy advocates will likely raise objections to developing such capabilities as the fear of “big brother watching” and monitoring people activities without their consent will raise concerns. The risk of inadvertent activation by the user or unexpected observation of activities by parents or others in authority may cause objections to the use of the program. The reliability of the software and the respective mobile hardware and other devices may result in false triggering of emergency response and taxing of the emergency responder capabilities. Guideline for accessing the system, utilizing such capabilities, and responding to reported activations would be required. Legal statutory review and the development of governmental protocols for response and oversight may be required to alleviate some of the concerns and still provide the desired benefits to first responders.

Unlike the GPS tracking applications *Find My iPhone* or *Where's My Droid*¹²⁸ that can be easily accessed and defeated by “professional” thieves by turning off the device or erasing the memory before the tracking capability is activated, *EmergenSee* automatically records the location coordinates and transmits the information to the secure server along with the other designated locations even if the device is destroyed or the signal is subsequently lost. Once the GPS coordinates are determined, even if the signal is lost; security personnel or emergency responders can usually establish communication with others (teachers, other students, administrators, or others by landline) in the area to provide assistance.

Therefore, whether it is a youngster wandering off to elementary school, attending a sporting event with other classmates, or starting college in another city, the ability to directly communicate with family and loved ones can quickly quell the anxiety

¹²⁸ David Pogue, “How to Make Your Lost Phone Findable,” *New York Times* (New York, NY), August 9, 2012, Business Day Technology, [#], accessed August 14, 2012, <http://www.pogue.blogs.nytimes.com/2012/08/09/how-to-make-your-lost-phone-findable/>.

experienced from such separation. Having access from the soccer field or from under a desk during a terrorist scare keeps both parent and child connected and informed. The cost of the technology, with family cellular purchase plans provides a price point that allows every family the opportunity to be connected.

The ability to have interactive and potential two-way communication through a secure network eliminates much of the fear and trepidation experienced when a relative or friend is anxious about being in new surroundings or potentially placed in harm's way. *EmergenSee* or similar technology also provides an excellent intelligence-gathering tool in primary and secondary schools. Teachers, students, parents and visitors to local school who possess this technology can play a vital role in the event of an active shooter incident, a terrorist encounter, or any armed attack situation. The subscriber, with their handheld cellular device, would be able to record video and audio evidence to share with emergency first responders. The GPS location coordinates would also allow emergency response teams to know exactly where victims and hostages are located in the building and more accurately and efficiently prepare tactical strategies for rescue and mitigating the particular event. Such a tool enhances situational awareness and promotes safety for emergency first responders and the community in general.

VIII. SUMMARY

Incorporating the existing technology available in both the public and private sectors provides an opportunity to evaluate the different platforms and technological strategies available to communities. Individual pilot projects using the services delivered by federal and state homeland security agencies, and comparing these capabilities to that of the private sector vendors, provided an opportunity to assess programmatic capabilities.

A. PILOT STUDIES

1. Pilot Project #1—Pictometry

On June 28, 2012, a meeting was held with Mr. Joseph Sutorius, Director of Information Technology for the East Irondequoit School District to discuss the pilot program that he led on behalf of the school district and coordinated for the Board of Cooperative Educational Services (BOCES) regional office. Mr. Sutorius purchased 360-degree camera equipment, through BOCES grant funding, to photograph the interior rooms of every building throughout the district to incorporate the photographs into the Pictometry system. He, members of his staff, and students from the Rochester Institute of Technology (RIT) received three days of training to understand the use of the camera's equipment, the Pictometry hardware and software in order to be able to process the buildings correctly.¹²⁹

The camera takes an image that encompasses 186-degree. The operator needs only to take a photograph in two opposing directions in each room. The equipment is outfitted with a collar that ensures that the photographs accurately capture the entire interior of the room (floor-to-ceiling, wall-to-wall) resulting in a complete 360 degree virtual tour of the space, when the two photos are trimmed (6-degree overlap for each image) and then “stitched” together to form one image. Each photo is then imbedded in

¹²⁹ Joseph Sutorius, Director of Information Technology. East Irondequoit Central School District, interview by author, Eastridge High School, Irondequoit, NY, June 28, 2012.

the Geographic Information System (GIS) layer of the electronic building floor plan. The computer system creates multiple layers incorporating images of:

1. First Floor
2. Second Floor
3. Basement
4. Roof
5. Exterior Ground Level,
6. Utilities and services

The student volunteers from Rochester Institute of Technology (RIT) responded to the school buildings, outside of the standard business hours, to ensure that the buildings were vacant at the time of photographing. Each room was identified by the room number and also by its common reference or purpose (women's room, gymnasium, chemistry lab, etc.). These individual rooms were then incorporated into the GIS layer containing the building floor plan. The student volunteers spent ten weeks working with the systems, processing six schools and administration buildings in the school district with photographs, and ensuring that the photos were correctly identified with specific points on the respective electronic floor plans. Documents, including written directives and protocols, hazardous material labels, text labels and other important information were also linked to specific photos and highlighted with an icon in the digital image. Existing video surveillance camera locations were also specifically identified on the floor plan mapping software. The plan is to incorporate access to the streaming video from the surveillance cameras into the capabilities of the Pictometry photographic imagery access.

The system provides the opportunity for school officials, police, fire and EMS personnel to be able to access the photographic images via the internet. All of the local police vehicles, fire vehicles, and many of the EMS vehicles are equipped with laptop computers with internet capability. The Emergency Communications Department (ECD-911Center) is equipped with Pictometry software and the capability to share the images and information with first responders. The school district, in this pilot program, is working to share the district information, captured in Pictometry, with the 911Center. The school district can currently share the information with the local police via secured

access authorization, to police vehicles equipped with the internet capability that are in proximity to the school wide area network (WAN).¹³⁰ The plan is to provide the system to the 911 Center to ensure easy access to all first responder.

Local police and tactical support teams will be able to use this emerging technology to plan response strategies for both minor events and major tactical situations involving multiple agency response.¹³¹ Each of the disciplines involved in emergency response will be able to share intelligence, work with “real time” information, and all work from the same electronic platform. Having access to streaming video is invaluable in establishing situation awareness. Incorporating the capabilities of the imagery provided by Pictometry allows for remote tactical planning and a back-up to the streaming video, with still images, if a video camera were to be disabled, damaged or occluded by smoke, fire, or vandalism.¹³²

The networking between BOCES, the school district, and Pictometry provided an opportunity to evaluate the strategies employed with the school district taking the lead with the project. Some of the lessons learned were to:

- Have the police agency coordinate or assist with the project
- Engage Pictometry staff throughout the process
- Consult with the 911 Center early in the development
- Consult with tactical and specialized unit staff for their perspectives
- Consult with fire personnel and EMS staff
- Establish a common language among first responders
- Consult with teachers and maintenance staff
- Consult with building engineers
- Engage County GIS personnel to support and advise

¹³⁰ Joseph Sutorius, Director of Information Technology. East Irondequoit Central School District, interview by author, Eastridge High School, Irondequoit, NY, June 28, 2012.

¹³¹ James Marchetti, Pictometry, interview by author, Kane Drive, Irondequoit, NY, June 28, 2012.

¹³² Ibid.

(The foregoing was based upon a meeting with the school district—Pictometry—town police—sheriff office staff—school administration on June 28, 2012 to discuss the pilot project.)¹³³

2. Pilot Project #2—A.C.A.M.S

On March 13, 2012, a meeting was held with Mark Kreyer (DHS) and John McNamara (NYS Office of Counter Terrorism (OCT), Division of Homeland Security and Emergency Services) to discuss the Automated Critical Asset Management System (ACAMS) and its applicability to school districts. Mr. McNamara explained the capabilities and functionality of the system and provided the web-addresses and the Internet links to the various connections to obtain Federal Emergency Management Agency (FEMA) information. Subsequent to the presentation, Mr. McNamara advised that he would review with the ACAMS processing staff to determine their availability to support a project in Monroe County this year. Later that day, he relayed that if the appropriate forms could be completed and submitted by March 31, 2012, the team would likely be able to process a selected building for inclusion into the system by November of 2012.

A survey of the local suburban and rural school districts in the Monroe County area was conducted to determine interest in being involved in a pilot study for electronic processing of a building in their district. The Penfield Central School District Superintendent John Carlevatti immediately volunteered to be involved and to dedicate staff to completing the project.¹³⁴ The application forms (Federal ACAMS Asset Manager Questionnaire (AMQ)—School Asset Type Template—New York State Implementation Plan) were delivered to the Penfield School District liaison Susan Kummer, PPS/TOSA, the District Health and Safety Committee Coordinator for completion.

¹³³ Andrew Mendola, Pictometry, interview by author during a meeting at the East Irondequoit Central School District, Kane Drive, Irondequoit, NY, June 28, 2012.

¹³⁴ Lou Tomassetti, Captain Monroe County Sheriff's Office, interview by author via telephone, 130 Plymouth Avenue South, Rochester, NY, March 16, 2012.

The AMQ (*refer to **Appendix C***) is a thirty page questionnaire used for capturing information regarding any type community asset. The forms requests information ranging from the building name, address and telephone numbers to identifying the responding police, fire, EMS, and the area hospitals. Points of contact, security information, emergency planning information, locations of hazardous materials (and other liabilities), mission of the operation and its threat history are also documented. Included in the data being requested is taxonomy, facility dimensions (sq. ft.—# of buildings—new construction) and the projected population numbers (employees—visitors—maximum capacity—etc.). The questionnaire is extremely thorough in identifying appropriate information that may be needed during an emergency. The forms are however somewhat confusing and difficult to complete. The electronic version does have “drop-down” menus to assist in the completion of the respective forms.¹³⁵

After completing the federal AMQ and collecting the accompanying maps, floor plans, data sheets and associated paperwork, the six-page New York State School Asset Type Template¹³⁶ was the next required task (*refer to **Appendix D***). This form captured information specific to school buildings:

1. Type of School
2. Grade Levels
3. Enrollment
4. Staff Count
5. Safety Plans
6. Evacuation Routes
7. Locations of assets and liabilities (shutoffs—storage tanks—etc.)
8. Building Layout (library—safe rooms—roof access points—etc.).

¹³⁵ United States Department of Homeland Security, comp. *Automated Critical Asset Management System (ACAMS) Asset Manager Questionnaire (AMQ)*. Washington, DC: U.S. Government, 2012.

¹³⁶ NYS Office of Counter Terrorism – Critical Infrastructure Unit, School Asset Type Template, Email message to author, March 15, 2012.

Once the Asset Template was completed, the Implementation Plan Memorandum needed to be attached. The instructions from the New York State (NYS) Office of Counter Terrorism note that, “Although no specific format is required for the implementation plan, the document should clearly communicate the following:

1. Identify all organizations that are expected to participate.
2. Desired interest and support from leadership of which the team will be comprised.
3. Classify the jurisdiction/s in which the assessment work is expected to occur.
4. Communicate the goals and outcomes anticipated from the assessment work.
5. Identify the expected leader/s of the assessment team.
6. List anticipated team members and the skill sets which are to be leveraged.”¹³⁷

On July 6, 2012, John McNamara conducted a webinar with the Penfield School District, Penfield Volunteer Emergency Ambulance, Penfield Fire Department, and the Monroe County Sheriff’s Office. The agenda was to explain the Enhanced Visual Assessment Program (EVAP) offered through the NYS Office of Counter Terrorism. The EVAP Assessment Team requires from the facility:

1. Review and input on the Coordination Plan
2. Digital floor plans of the covered areas within the grounds
3. An escort with access to the required collection areas
4. Digital copies of any documents to be incorporated (Emergency Manuals, etc.)
5. Mr. McNamara developed a four (4) month timeline for the project consisting of:
 - Product Demonstration and Requirements Meeting
 - Coordination Plan Edits

¹³⁷ NYS Office of Counter Terrorism – Critical Infrastructure Unit. “Implementation Plan Memorandum.” Email message to author. March 15, 2012.

- All Electronic Documents Provided
- Pre-Assessment On-Site Collection (2 Person Team)
- On-Site Assessment (3 Person Team)
- Rough Draft Product Review
- Final Product Complete

(See **Appendix E** for the schedule provided for the On-Site Collection Team)

(Conclusion: The product will not be finalized without the approval of the identified leadership responsible for the Penfield High School. Additionally, distribution of the product will be limited to those first responder agencies approved by the Penfield High School).¹³⁸

The On-Site Collection Team will process the buildings based on the potential threats to the facilities from:

- Armed Intruder (Active Shooter)
- Bomb Threat (Improvised Explosive Device)
- Hazardous Materials On-Site (Chemical-Biological Introduction)
- Severe Weather
- Fire

(Refer to **Appendix F** for the “Vulnerability Assessment Product Development Plan”)

Based on the identified potential threat streams above, the following areas were incorporated into the product during the on-site collection process:

- Comprehensive School Interior (Physical & Mechanical Locations)
- School Exterior (ingress and Egress locations and Rooftops)
- Sports Facility Out-Building
- Co-Generation Facility
- Transportation Bus Garage

¹³⁸ John McNamara, NYS Office of Counter Terrorism – Critical Infrastructure Unit, interviewed by author via the telephone, July 6, 2012.

(The identified threat criteria was agreed to by school officials and first responders)¹³⁹

Essentially, the NYS Critical Infrastructure Unit deploys a two-person team to process the asset (in this case the Penfield High School Property) with the 360 degree imaging camera. The team then takes the data collected from the DHS Asset Manager Questionnaire and combines it with the electronic floor plan of the buildings involved in the project. That combined information is then layered and embedded in a schematic or mapping system and stored in a virtual database. The system is also enabled with “Gigapan,” which is video imagery with a map orientation, for the video feed, in the lower right corner of the image.¹⁴⁰

The database is remotely accessible to emergency first responders receiving authorization from the school district. Any security cameras in use, in the processed buildings, can be remotely accessed by activating an icon on the map or schematic. Subsequent to preparing the virtual database, the data collection team returns to the facility, conduct a vulnerability assessment of the property, and provide suggestions for disaster response and mitigation.

¹³⁹ John McNamara, NYS Office of Counter Terrorism – Critical Infrastructure Unit, interviewed by author via the telephone, July 6, 2012.

¹⁴⁰ Ibid.

IX. RECOMMENDATIONS

Based upon the research and a review of the two pilot projects conducted locally that essentially compared the services of the private sector (Pictometry) to that of the public sector (DHS and NYS OCT), it was discovered that very similar capabilities are provided by both processes.

The County of Monroe currently contracts with Pictometry to support many of the departments of county government. The county provides these services to the other municipalities (city, towns and villages) within the county free of charge. It is logical that the local (Monroe County) approach would be to use the services of Pictometry to develop a safety initiative for the school districts within the county.

From the lessons learned during the pilot studies, it is critical to receive input, advice and support from the first responder community during the processing component of the photographing and schematic development. The technical expertise provided by police, fire, EMS, building engineers, and maintenance staff is essential to ensure that the floor plans, mapping strategies, and facility characteristics are properly identified. Receiving the perspectives of tactical and specialized unit staff during the photographing phase guarantees the images capture proper vantage points required to remotely plan tactical response, develop appropriate “stand-off” distances in the event of a detonation, and it address other strategic tactical planning concerns.

Engaging the Pictometry staff and the supervisors of the 911 Center early in the development of the project ensured that all of the capabilities provided by Pictometry software can be incorporated. The 911 Center staff members were able to consult with program development staff on how to most effectively incorporate the program design into the capabilities and protocols of the dispatch operations. The County GIS and Radio Center technical engineers provided advice regarding the integration of the hardware, software and fiber optic systems that the county currently has in place. The ability to

leverage the capabilities provided by BOCES, the respective school districts, and the municipalities was important to capturing the optimum systems coordination and functionality.

Once the photo-processing plan was established and the floor plan and building schematics were layered with GIS capabilities and video integration; the response plans were attached and incorporated into the storage system. Having an agreed upon common language among first responders was important to avoid misunderstanding and confusion.

Law enforcement, firefighters and emergency medical services personnel all speak different languages. Police officers use ten codes with plain text and unit identifiers unique to that particular person. Firefighters use National Incident Management System (NIMS) and Incident Command System (ICS) terminology almost exclusively and have a whole vernacular devoted to fire control and suppression. Medics speak a language devoted to conveying large amounts of data to hospitals. The three disciplines also have widely discrepant command and control styles associated with their discipline. EMS personnel usually work in groups of two on an ambulance and employ a loosely structured command style. EMS command and control within the ICS structure is typically much less militaristic. Law enforcement officials on the other hand, have a much more stringent hierarchy in rank structure with patrol officers, sergeants, lieutenants, captains, and majors all working individually for their respective supervisors. Firefighters are responsible to maintain accountability over large groups of equipment and personnel over potentially large geographic areas, thus creating a separate and distinct terminology for their activities. The linguistic and cultural differences represent a key challenge in creating policies and procedures and sharing information quickly and effectively.

A strategic view to create functional interoperability, increase coordination, cooperation, and information sharing among first responders is to bridge the cultural and linguistic gaps inherent in the different emergency responder organizations and establish plain language communication guidelines. Such guidelines eliminate the multiple

definitions inherent in ten codes and other discipline-specific terminology. Many agencies have slowly gravitated to the plain language format as ICS and NIMS systems have become more widely accepted.

Due to the current contractual agreement between the County of Monroe and Pictometry, it is logical to coordinate future school emergency planning with the assistance of their services. In other areas of New York State and across the nation, where Pictometry or other vendors providing similar services are available, the aforementioned guidelines and suggestions would apply regarding program development and integration with established infrastructure. In those areas of the state and nation, where such private sector agencies are not available or the particular municipality is not in a position to contract for such services, coordination with the Department of Homeland Security A.C.A.M.S. program provides a comparable outcome. The 360-degree camera can be obtained from the DHS for use on a critical infrastructure project or purchased relatively inexpensively. DHS staff members are willing to consult and provide guidance in developing a project plan. The forms provided by the A.C.A.M.S. Program are tedious and time consuming to complete, however, they are very thorough and provide direction to achieve a comprehensive final product.

Whether a community utilizes a private sector vendor (ex. Pictometry) or the public sector (DHS—A.C.A.M.S. Program) approach noted above, the outcome achieved appears to be similar in nature. With either system, emergency first responders are able to access, share, and employ the latest technology to address critical incidents on school properties. Not only does the technology offer efficient and effective support to police, fire and EMS personnel, the safety of the community and the respective responders is enhanced through increased situational awareness.

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APPENDIX A. SURVEY CONDUCTED THROUGH THE NEW YORK STATE SHERIFF'S ASSOCIATION

NEW YORK STATE SHERIFFS' ASSOCIATION HOMELAND SECURITY SURVEY PART 1

Name of County	How many suburban and rural school districts do you have in your county?	Does each district have an emergency response plan for basic emergency ("all hazards") response?	Do the plans for each of the school districts in your county contain the same information and follow the same format?		Do the plans incorporate building floor plans, location of assets (fire hydrants, first aid access, etc.) and hazards (gas mains, location of toxic chemicals, etc.)?		Are the plans in an electronic format?	
Steuben	17	Yes	Yes		Yes		Yes	
Tompkins	10	Yes	Yes		Yes		Yes	
Warren	9	Yes	Yes		Yes		Yes	
Washington County	11 Districts 22 Public Schools 10,071 students	No	Yes		Yes		No	
Wayne County	Eleven (11)	Yes		Same plan, but different format.	Yes		No	
Westchester	Numerous, but answers that follow will be limited to the two (3) that are in our first-responder jurisdiction.	Yes	No		Yes	Partial yes. Not all include location of toxic chemicals, etc.	No	

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 1

Name of County	How many suburban and rural school districts do you have in your county?	Does each district have an emergency response plan for basic emergency ("all hazards") response?	Do the plans for each of the school districts in your county contain the same information and follow the same format?		Do the plans incorporate building floor plans, location of assets (fire hydrants, first aid access, etc.) and hazards (gas mains, location of toxic chemicals, etc.)?		Are the plans in an electronic format?	
Jefferson	13 plus 3 in the City of Watertown	No		Unknown		Unknown		Unknown
Livingston	9 Districts and 3 Parochial Schools	Yes	Yes	Some better than others	Yes	No Fire Hydrants	Yes	
Livingston	11	Yes	Yes		Yes		Yes	
Niagara	10 districts	Yes	Yes	Niagara-Orleans BOCES supplies plan covering all districts	No	They don't but our agency has completed site surveys of all schools which includes this info	No	Not yet- plans underway to make electronic. Considering an app creation for each school.
Onondaga County	18 Total Districts...1 City; 10 Suburb and 7 Rural	Yes	No		Yes		Yes	

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NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 1

Name of County	How many suburban and rural school districts do you have in your county?	Does each district have an emergency response plan for basic emergency ("all hazards") response?	Do the plans for each of the school districts in your county contain the same information and follow the same format?		Do the plans incorporate building floor plans, location of assets (fire hydrants, first aid access, etc.) and hazards (gas mains, location of toxic chemicals, etc.)?		Are the plans in an electronic format?	
Yates	4	Yes	Yes		Yes		Yes	

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 2

Name of County	Are the plans tested and drills conducted with police, fire, and EMS personnel? If so, how often? If not, Why not?		Would the ability to test and conduct drills of the plans in a simulated or virtual environment assist your agency in complying with the suggested guideline of testing or conducting drills emergency plans annually?		Do you have access to photographs of the interior (each room) of the school buildings?	Are the photographs in an electronic format?
Onondaga County	No	Police, Fire and EMS have all participated in basic drills however, active shooter has been conducted on-site in less than half of the districts. All city, county, town and village members of service have been trained in and have participated in active shooter drills.	Yes		Yes	Yes
Ontario	Yes		Yes		No	Yes

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4/26/2012

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 2

Name of County	Are the plans tested and drills conducted with police, fire, and EMS personnel? If so, how often? If not, Why not?		Would the ability to test and conduct drills of the plans in a simulated or virtual environment assist your agency in complying with the suggested guideline of testing or conducting drills emergency plans annually?		Do you have access to photographs of the interior (each room) of the school buildings?	Are the photographs in an electronic format?
Cortland	No	The schools have not inquired and not to make excuses, but we have not had the manpower and money to assign someone to this at this time.	Yes	Of course, but I would need assistance with funding to implement such a plan.	No	No
Delaware	Yes	in some instances - school are sensitive about using time in their school day.	Yes		No	No

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4/26/2012

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 2

Name of County	Are the plans tested and drills conducted with police, fire, and EMS personnel? If so, how often? If not, Why not?		Would the ability to test and conduct drills of the plans in a simulated or virtual environment assist your agency in complying with the suggested guideline of testing or conducting drills emergency plans annually?		Do you have access to photographs of the interior (each room) of the school buildings?	Are the photographs in an electronic format?
Albany	Yes	Our Emergency Management goes over the plans annually if not tested	Yes		Yes	Yes
Broome	No		Yes		No	No
Cayuga	Yes		Yes		Yes	Yes
CHAUTAUQUA	Yes		Yes		Yes	Yes
Chautauqua	Yes		Yes		Yes	Yes
Clinton	Yes	Annual	Yes		Yes	No
Columbia	Yes	Not every year, but each has drilled	Yes		No	

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 2

Name of County	Are the plans tested and drills conducted with police, fire, and EMS personnel? If so, how often? If not, Why not?		Would the ability to test and conduct drills of the plans in a simulated or virtual environment assist your agency in complying with the suggested guideline of testing or conducting drills emergency plans annually?		Do you have access to photographs of the interior (each room) of the school buildings?	Are the photographs in an electronic format?
Essex	No	Most are new plans, some schools have been tested but not all.	Yes.		No	No
Franklin	Yes		Yes.		No	
Genesee	Yes	However, very seldom.	Yes.		No	No
Greene	Yes	maybe once a year	Yes.		No	No
Jefferson		Drills with police are sporadic	Yes.		No	No
Livingston	Yes	Based on availability and priority of District	Yes.		No	No
Livingston	Yes		Yes.		Yes	Yes.
Niagara	Yes	a few times a year, not all schools.	Yes.		No	No

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NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 2

Name of County	Are the plans tested and drills conducted with police, fire, and EMS personnel? If so, how often? If not, Why not?		Would the ability to test and conduct drills of the plans in a simulated or virtual environment assist your agency in complying with the suggested guideline of testing or conducting drills emergency plans annually?		Do you have access to photographs of the interior (each room) of the school buildings?	Are the photographs in an electronic format?
OSWEGO	Yes		Yes	WE HAVE A SCHOOL THAT WE NOW USE FOR TRAINING SINCE IT CLOSED THE DISTRICT ALLOWS US TO TRAAIN AT ANY TIME	Yes	Yes
Oswego	Yes	every two years or so	Yes		Yes	No
Otsego	Yes		Yes		No	No
Putnam	Yes	at least once a year	Yes			Yes
Rockland County, New York	Yes	Annually or Bi-annually depending on District & Funding	Yes		Yes	Yes

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 2

Name of County	Are the plans tested and drills conducted with police, fire, and EMS personnel? If so, how often? If not, Why not?		Would the ability to test and conduct drills of the plans in a simulated or virtual environment assist your agency in complying with the suggested guideline of testing or conducting drills emergency plans annually?		Do you have access to photographs of the interior (each room) of the school buildings?	Are the photographs in an electronic format?
Orange	No	School Administrations are reluctant to have Law Enforcement in the building during school hours.	Yes	By doing it in a simulated or virtual environment it would allow us to train without interrupting the educational environment, however at least once a year training should occur in the school with staff.	Yes	Yes
Orleans	No		Yes		No	No

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 2

Name of County	Are the plans tested and drills conducted with police, fire, and EMS personnel? If so, how often? If not, Why not?		Would the ability to test and conduct drills of the plans in a simulated or virtual environment assist your agency in complying with the suggested guideline of testing or conducting drills emergency plans annually?		Do you have access to photographs of the interior (each room) of the school buildings?	Are the photographs in an electronic format?
Schoharie	No	Only 2 schools have asked us to set down with them	Yes		No	No
Schuyler	Yes		Yes		No	No
St. Lawrence	No	plans started to do so	Yes		No	
Steuben	Yes		Yes		Yes	Yes
Tompkins	Yes		Yes			Yes
Warren	Yes		Yes		No	
Washington County	Yes	We try to train at different schools each year. We have done two so far this year.	Yes		No	No
Wayne County	No		Yes		Yes	No
Westchester	Yes	As requested by school.	Yes		No	No
Yates	Yes		Yes		Yes	Yes

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Albany	Yes	Pictometry and Google Earth	No		Yes		No		
Broome	Yes	County GIS and Pictometry	Yes		Yes		Yes	Some lack of cooperation in emergency notification.	
Cayuga	Yes		Yes		Yes		No		
CHAUTAUQUA			Yes		Yes		No		
Chautauqua	Yes		Yes		Yes		Yes	Financial limitations	

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

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Clinton	Yes		Yes		Yes		Yes	Communications between agencies has occasionally been a problem.	

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

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Columbia	Yes		Yes		No	Not knowing who could be an "Active Shooter" a portion of the law enforcement plan should be kept separate	Yes	Minor problems along the way, however the district for the most part, have been sincere in their efforts	The Sheriff's Office/Emergency Mangt obtained a grant funding instillation of radio receivers which allows 911 to unlock a door by radio tone in every school building in our county. This allows access to the school by law enforcement in a lock down situation.
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NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Cortland	Yes		No		Yes		Yes	Funding is my major problem. I do not have the personnel to properly cover the daily case load I have now and looking to add anything new at this point is a real problem for me. Even something as important as this.	This admittedly should be a bigger priority than it often gets credit for

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Delaware	Yes		Yes	google and County Tax Mapping Office	Yes	absolutely!	Yes	Financial issues are always out there	
Essex	Yes		Yes		Yes		Yes	Financial	
Franklin	Yes		No		Yes		Yes	Financial	
Genesee	Yes		Yes		Yes		No	Lack of finances and personnel.	
Greene	Yes	Not all Schools.	No		Yes		Yes	Financial difficulties.	

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Jefferson	Yes	Google and Pictometry through property	Yes	Pictometry	Yes		No		
Livingston	Yes	Interior video at some districts	Yes		Yes	Available on County Network	Yes	Different priority at different districts	
Livingston	Yes		Yes		Yes		Yes	State University Reluctant to share DATA	We conduct constant review of schools and plans with school officials works great

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Niagara	Yes	Pictometry thru 911 Center	Yes	Pictometry thru 911 Center	Yes	Police must embrace the cloud-great asset	No		SRO's are a great resource but they continue to be cut.
Onondaga County	Yes				Yes	Onondaga County has an ACAMS Work Group	Yes	Some districts are reluctant to authorize active shooter practical application within their buildings.	
Ontario	Yes		Yes		Yes		No		

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in "the cloud" with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Orange	Yes		Yes		Yes		Yes	School Administration as been reluctant at best in allowing Law Enforcement into there buildings also there has been a sense of "won't happen here" attitude amongst the Administration of the schools.	We are currently working with BOCES to formulate a standardized response to "Active Shooter" events which will be pushed to the school districts under the BOCES Health and Safety program that the School Districts subscribe to.

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Orleans	Yes		Yes	Pictometry	Yes		No		
OSWEGO	Yes		Yes		Yes		Yes	SOME FINICAL, MOSTLY POLITICAL. SOME SUPERINTENDANTS DONT LIKE TO THINK THERE IS A PROBLEM IN THE DISTRICT	
oswego	Yes		Yes		Yes		Yes	mainly financial	
Otsego	Yes		Yes		Yes		No		
Putnam	Yes		Yes		Yes		No		

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

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Rockland County, New York	Yes		Yes		Yes		Yes	Financial & political - upon initial proposal - denial that there is a problem of sufficient magnitude to "Disrupt" the status quo of school operations	

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Schoharie	No		No		No		No		All of the plans we had from schools concerning emergency respond to the schools were lost during the flood of 8/28/11
Schuyler	Yes		Yes		Yes		No		

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
St. Lawrence	Yes		Yes		Yes		Yes	lack of the ability to direct and many schools are not as responsive as they should be due to administration and/or board direction	would like to have the funding make these changes and the personnel to implement

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

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Steuben	Yes		Yes		Yes		Yes	The time needed to constantly updated each districts changes such as building capital projects, personnel, etc.	
Tompkins			Yes		Yes		No		
Warren	Yes		Yes		Yes		No		

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Washington County	Yes		No		Yes		No		We have had a full active school shooter table top in the past and our S.E.R.T. team trains at several schools a year.
Wayne County	Yes		Yes		Yes		Yes	Two school district (Red Creek and Williamson) have denied 24 hour access with keys/fobs.	Good luck on your work.
Westchester	Yes		Yes		Yes		Yes	Sceduling and financial concerns.	

NEW YORK STATE SHERIFFS' ASSOCIATION
HOMELAND SECURITY SURVEY
PART 3

Name of County	Do you have access to aerial photographic images (Pictometry, Geo-Span, Google, etc.) of the school properties?		Do you have aerial photographic images of the entire county?		Would an automated electronic process to share plans and images with all first responders be beneficial? (Example: ACAMS (Automated Critical Asset Management System) – or - a virtual data system in “the cloud” with secure access by police, fire, and EMS).		Have you experienced problems or impediments (logistical, political, financial, etc.) to implementing safety programs in your school districts? If so, please explain the difficulties encountered.		Other comments?
Yates	Yes		Yes		Yes		Yes	Have 18 mennonite rural schools - 4 above public	

APPENDIX B. NEW YORK STATE COUNTIES PARTICIPATING IN THE SURVEY

The counties included in the survey results include:

- Albany
- Broome
- Cayuga
- Chautauqua
- Clinton
- Columbia
- Cortland
- Delaware
- Essex
- Franklin
- Genesee
- Greene
- Jefferson
- Livingston
- Monroe
- Niagara
- Onondaga
- Ontario
- Orange
- Orleans
- Oswego
- Otsego
- Putnam
- Rockland
- Schoharie

- Schuyler
- St. Lawrence
- Steuben
- Tompkins
- Warren
- Washington
- Wayne
- Westchester
- Yates

APPENDIX C. ASSET MANAGER QUESTIONNAIRE FORM (PROVIDED BY ACAMS)

Automated Critical Asset Management System (ACAMS)
Asset Manager Questionnaire (AMQ)



U.S. Department of Homeland Security || Office of Infrastructure Protection

Date of AMQ: ____-____-____

This form, when filled out, (even partially) is considered Protected Critical Infrastructure Information (PCII). In accordance with the provisions of the Critical Infrastructure Information Act, 6 U.S.C. §§ 131 et seq., it is exempt from release under the Freedom of Information Act (5 U.S.C. § 552) and similar State and local disclosure laws. Unauthorized release may result in criminal and administrative penalties. It is to be safeguarded and disseminated in accordance with the Critical Infrastructure Information Act, 6 U.S.C. §§ 131 et seq., the implementing Regulation, 6 C.F.R. Part 29 and PCII Program requirements.

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For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov



How to Use the Template

This template is intended to for use by authorized users of the Automated Critical Asset Management System (ACAMS). Data entered using this template cannot be uploaded directly to the system via electronic means.

The template has been designed and created in an editable *.pdf form and permissions for saving have been extended to users of Adobe Reader so that you may complete each section as necessary and save the data you have entered. In addition, drop-down field references are included in the appendix of this template if you wish to complete the template by hand.

Any questions concerning the template can be directed to the ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov

General Asset Information

You may enter General Asset Information for an asset. When you enter General Asset Information for an asset, you must populate data in fields appended by an "*" unless otherwise noted. You may also enter one or multiple Other Name(s) and Phone Number record(s) as part of General Asset Information. These fields are available on subsequent pages of this template. For your convenience, drop-down field references have been included in Appendix A of this template.

*Asset Name	
Parent Company	
Doing Business As <small>This field indicates the operating name of a company, as opposed to the legal name of the company. Some states require DBA or fictitious business name filings to be made for the protection of consumers conducting business with the entity.</small>	
Operating Entity <small>This field indicates the agency, command, or commercial entity that is responsible for the operation of the asset.</small>	
Website	
Owner Type	Select an item
Description	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov

Other Names

This template should be printed in conjunction with the General Asset Information.

You may enter one or multiple Other Name record(s) for an asset in the General Asset Information. When you enter an Other Name record, you must populate data in fields appended by an “*” unless otherwise noted.

Other Name	
Other Name	
Other Name	
Other Name	
Other Name	

[For additional Other Name records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov

Asset Phone Number(s)

This template should be printed in conjunction with the General Asset Information.

You may enter one or multiple Phone Number record(s) for an asset in the General Asset Information. When you enter an Asset Phone Number record, you must populate data in fields appended by an “*” unless otherwise noted. For your convenience, drop-down field references have been included in Appendix A of this template.

*Phone Type	Select an item
*Phone Number Enter in the following format: (xxx) xxx-xxxx	
Extension	

*Phone Type	Select an item
*Phone Number Enter in the following format: (xxx) xxx-xxxx	
Extension	

*Phone Type	Select an item
*Phone Number Enter in the following format: (xxx) xxx-xxxx	
Extension	

*Phone Type	Select an item
*Phone Number Enter in the following format: (xxx) xxx-xxxx	
Extension	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov

Address

You may enter one or multiple Address record(s) for an asset. When you enter an Address record, you must populate data in fields appended by an “*” unless otherwise noted. You are required to enter at least one “Physical” Address for an asset. For a “Physical” Address, data must be entered in the Latitude and Longitude in the WGS84 Decimal Degrees (DD) format (xx.yyyyy); where “xx” is equal to two digits, “yyyyy” is no less than five digits, and directional orientation is determined by a positive (+) or negative (-) designation. For your convenience, drop-down field references have been included in Appendix A of this template.

*Address Type	Select an item
No Street Address This field is only available for a “Physical” address.	<input type="checkbox"/>
*Address Line 1 This field is not required for a No Street Address.	
Address Line 2	
*State	Select an item
*County	
*City	
*Zip Code	
Zip+4	
*Latitude This field is only required for a “Physical” address, and must be entered in the format WGS84 decimal degrees with a minimum five (5) and maximum seven (7) decimal digits.	
*Longitude This field is only required for a “Physical” address, and must be entered in the format WGS84 decimal degrees with a minimum five (5) and maximum seven (7) decimal digits.	

[For additional Address records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Taxonomy

You may enter one or multiple Taxonomy record(s) for an asset. When you enter a Taxonomy record, you must populate data in fields appended by an “*” unless otherwise noted. You must enter only one “Primary” Taxonomy. You can access the latest DHS Infrastructure Data Taxonomy document in Resources tab under Federal Resources/Publications. For your convenience, dropdown field references have been included in Appendix A of this template.

Primary	<input type="checkbox"/>
Taxonomy Code	
*Sector	Select an item
*Sub-Sector	
Segment	
Sub-Segment	
Asset Type	

Primary	<input type="checkbox"/>
Taxonomy Code	
*Sector	Select an item
*Sub-Sector	
Segment	
Sub-Segment	
Asset Type	

[For additional Taxonomy records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Responding Police Department

You may enter one or multiple Responding Police Department record(s) for an asset. These are assets with a "Police Department" Asset Type (see the "Asset Type" template). You may enter multiple "Primary" Police Departments, but you must at least one must be entered for an asset. When you enter a Police Department record, you must populate data in fields appended by an "*" unless otherwise noted. For your convenience, drop-down field references have been included in Appendix A of this template.

*Police Department	
*Primary	<input type="checkbox"/>
Cardinal Direction	Select an item
Distance (mi)	
Response Time	
Comments	

*Police Department	
*Primary	<input type="checkbox"/>
Cardinal Direction	Select an item
Distance (mi)	
Response Time	
Comments	

[For additional Responding Police Department records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Responding Fire Department

You may enter one or multiple Responding Fire Department record(s) for an asset. These are assets with a "Fire Department" Asset Type (see the "Asset Type" template). You may enter multiple "Primary" Responding Fire Departments, but you must at least one must be entered for an asset. When you enter a Responding Fire Department record, you must populate data in fields appended by an "*" unless otherwise noted. For your convenience, drop-down field references have been included in Appendix A of this template.

*Fire Department	
*Primary	<input type="checkbox"/>
Cardinal Direction	Select an item
Distance (mi)	
Response Time	
Comments	

*Fire Department	
*Primary	<input type="checkbox"/>
Cardinal Direction	Select an item
Distance (mi)	
Response Time	
Comments	

[For additional Responding Fire Department records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Responding Hospital

You may enter one or multiple Responding Hospital record(s) for an asset. These are assets with a “Hospital” Asset Type (see the “Asset Type” template). You may enter multiple “Primary” Hospitals, but you must at least one must be entered for an asset. When you enter a Hospital record, you must populate data in fields appended by an “*” unless otherwise noted. For your convenience, drop-down field references have been included in Appendix A of this template.

*Hospital	
*Primary	<input type="checkbox"/>
Cardinal Direction	Select an item
Distance (mi)	
Response Time	
Comments	

*Hospital	
*Primary	<input type="checkbox"/>
Cardinal Direction	Select an item
Distance (mi)	
Response Time	
Comments	

[For additional Responding Hospital records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Point of Contact

You may enter one or multiple Point of Contact (POC) record(s) for an asset. When you enter a POC record, you must populate data in fields appended by an "*" unless otherwise noted. You may also enter one or multiple Address(es) and Phone Number record(s) for the POC. These fields are available on subsequent pages of this template. You are required to enter at least one of the following: E-mail, Address or Phone Number for each POC you enter. For your convenience, drop-down field references have been included in Appendix A of this template.

*POC Type	Select an item
*Describe	
Has Keys	<input type="radio"/> Yes <input type="radio"/> No
*Last Name	
First Name	
Middle Initial	
Salutation	
Title	
E-mail	
Comments	

[For additional POC records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

POC Address(es)

This template should be printed in conjunction with each POC.

You may enter one or multiple Address record(s) for an Asset POC. When you enter an Asset POC Address record, you must populate data in the fields appended by an "*" unless otherwise noted. An Address record must be entered if an E-mail or Phone Number does not exist. For your convenience, drop-down field references have been included in Appendix A of this template.

*Address Type	Select an item
*Address Line 1	
Address Line 2	
*State	Select an item
*County	
*City	
*Zip Code	
Zip+4	

*Address Type	Select an item
*Address Line 1	
Address Line 2	
*State	Select an item
*County	
*City	
*Zip Code	
Zip+4	

[For additional POC Address records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

POC Phone Number(s)

This template should be printed in conjunction with each POC.

You may enter one or multiple Phone Number record(s) for an Asset POC. When you enter an Asset POC Address record, you must populate data in the fields appended by an "*" unless otherwise noted. A Phone Number record must be entered if an E-mail or Address does not exist. For your convenience, drop-down field references have been included in Appendix A of this template.

*Phone Type	Select an item
*Phone Number Enter in the following format: (xxx) xxx-xxxx.	
Extension	

*Phone Type	Select an item
*Phone Number Enter in the following format: (xxx) xxx-xxxx.	
Extension	

*Phone Type	Select an item
*Phone Number Enter in the following format: (xxx) xxx-xxxx.	
Extension	

*Phone Type	Select an item
*Phone Number Enter in the following format: (xxx) xxx-xxxx.	
Extension	

*Phone Type	Select an item
*Phone Number Enter in the following format: (xxx) xxx-xxxx.	
Extension	

[For additional POC Phone Number records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Operation Hours

Schedules

You may enter one or multiple Schedule record(s) for an asset. When you enter a Schedule record, you must populate data in fields appended by an “*” unless otherwise noted. You may also enter one or multiple Shift/Delivery record(s) for a Schedule. These fields are available on subsequent pages of this template. For your convenience, drop-down field references have been included in Appendix A of this template.

*Schedule Name		
Standard Schedule	<input type="checkbox"/>	
Day of the Week	<input type="checkbox"/> Sunday <input type="checkbox"/> Monday <input type="checkbox"/> Tuesday <input type="checkbox"/> Wednesday <input type="checkbox"/> Thursday <input type="checkbox"/> Friday <input type="checkbox"/> Saturday	
Holiday	<input type="checkbox"/> New Year's Day <input type="checkbox"/> Birthday of Martin Luther King, Jr. <input type="checkbox"/> Washington's Birthday <input type="checkbox"/> Memorial Day <input type="checkbox"/> Independence Day	<input type="checkbox"/> Labor Day <input type="checkbox"/> Columbus Day <input type="checkbox"/> Veterans Day <input type="checkbox"/> Thanksgiving Day <input type="checkbox"/> Christmas Day
Effective Date Enter in the following format: mm/dd/yyyy		
Annually Recurring	<input type="checkbox"/>	
*Business Status	Select an item	
Opened From Enter in the following format: hh:mm		
Opened To Enter in the following format: hh:mm		
Comments		

[For additional Schedule records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Shifts/Deliveries

This template should be printed in conjunction with each Schedule.

You may enter one or multiple Shift/Delivery records for a Schedule. When you enter Shift/Delivery information for a Schedule, you must populate data in fields appended by an “*” unless otherwise noted. For your convenience, drop-down field references have been included in Appendix A of this template.

*Shift/Delivery Name	
Associated Schedules	
*Shift/Delivery Type	Select an item
Describe Only required for the “Other” Shift/Delivery Type.	
*Start Time Enter in the following format: hh:mm	
*End Time Enter in the following format: hh:mm	
Number of Employees	
Comments	

[For additional Shift/Delivery records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Facility Information

You may enter Facility information for an asset. When you enter Facility information for an asset, you must populate data in fields appended by an “*” unless otherwise noted.

Total Size (sq. ft.)	
Number of Buildings	
New Construction	
Comments	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Physical Security

You may enter Physical Security information for an asset. When you enter Physical Security information for an asset, you must populate data in fields appended by an “*” unless otherwise noted.

Question	Response	Amount	Comments
Does the asset have unarmed officers?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have armed officers?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have uniformed officers?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have plain-clothes officers?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a guard entrance?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have barricades?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a fence?	<input type="radio"/> Yes <input type="radio"/> No		

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Question	Response	Amount	Comments
Does the asset have a six-foot fence?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a chain link fence?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a reinforced wall?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have barbed wire?	<input type="radio"/> Yes <input type="radio"/> No		
Is the asset well lit?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a fire alarm system?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a silent alarm system?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a closed circuit television system?	<input type="radio"/> Yes <input type="radio"/> No		

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Question	Response	Amount	Comments
Does the asset have a cyber security program in place?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a badge system in place?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have an operational sprinkler system in place?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have guard dogs?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a mail screening program in place?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a vehicle log program in place?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a vehicle search program in place?	<input type="radio"/> Yes <input type="radio"/> No		
Does the asset have a visitor log program in place?	<input type="radio"/> Yes <input type="radio"/> No		

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Question	Response	Amount	Comments
Does the asset have parking available?	<input type="radio"/> Yes <input type="radio"/> No		
Any additional comments on other security measures at the asset not already captured?			

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Emergency Plan

You may enter one or multiple Emergency Plan record(s) for an asset. When you enter an Emergency Plan record, you must populate data in fields appended by an “*” unless otherwise noted. For your convenience, drop-down field references have been included in Appendix A of this template.

*Plan Type	Select an item
*Describe Only required for the “Other” Plan Type	
Plan Title	
*Author	
*Date Created Enter in the following format: mm/dd/yyyy	
Date Last Updated Enter in the following format: mm/dd/yyyy	
Date Disseminated Enter in the following format: mm/dd/yyyy	
Date Tested Enter in the following format: mm/dd/yyyy	
Comments	

[For additional Emergency Plan records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Hazardous Material

You may enter one or multiple Hazardous Material record(s) for an asset. When you enter a Hazardous Material record, you must populate data in fields appended by an "*" unless otherwise noted. You can access the latest Hazardous Material information in ACAMS in Resources under Federal Resources/Hazardous Materials. For your convenience, drop-down field references have been included in Appendix A of this template.

*Material Name	
*Material Type	Select an item
*Describe Only required for the "Other" Material Type.	
CAS Number The Chemical Abstracts Service Registration Number (or CAS Number) is a unique number assigned to a specific chemical and indexed in Chemical Abstracts published by the Chemical Abstracts Service in the U.S.	
State of Material	Select an item
Average Quantity	
Storage Location	
Storage Method	
Containment Method	
Comments	

[For additional Hazardous Material records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Threat History

You may enter one or multiple Threat History record(s) for an asset. When you enter a Threat History record, you must enter data in the fields appended by an "*" unless otherwise noted. For your convenience, dropdown field references have been included in Appendix A of this template.

*Event Date/Time	
*Threat Type	Select an item
*Describe	
Description	
Resolution	
Comments	

[For additional Threat History records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Mission

You may enter Mission information for an asset. When entering Mission information, data must be entered in the fields appended by an “*” unless otherwise noted.

Question	Comments
What is the general purpose of the asset? Describe the assets mission.	
Does this asset have any redundant facilities/components that can augment its operations?	
What other facilities/components does this asset depend on to operate?	
How does this asset affect other facilities/components?	
How does the mission of this asset contribute to or affect the primary functions of the city?	
How does the mission of this asset contribute to or affect the primary functions of the county?	
How does the mission of this asset contribute to or affect the primary functions of the state?	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Question	Comments
How does the mission of this asset contribute to or affect the primary functions of the region?	
How does the mission of this asset contribute to or affect the primary functions of the nation?	
How does the mission of this asset contribute to or affect the primary functions of the internationally?	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

Population

You may enter Population information for an asset. When you enter Population information for an asset, you must populate data in fields appended by an “*” unless otherwise noted. For your convenience, drop-down field references have been included in Appendix A of this template.

Employees During Business Hours	to
Employees During Non-Business Hours	to
Visitors During Business Hours	to
Visitors During Non-Business Hours	to
Daily Population	to
Event Population	to
Maximum Capacity	
Annual Population	to
Area Surround Type	Select an item
Describe <small>Only required for the “Other” Area Surround Type.</small>	
Populated Areas Around Critical Asset	
Comments	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

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APPENDIX D. NEW YORK STATE—OFFICE OF COUNTER TERRORISM—IMPLEMENTATION PLAN



NEW YORK STATE
DIVISION OF HOMELAND SECURITY AND EMERGENCY SERVICES
OFFICE OF COUNTER TERRORISM

Andrew M. Cuomo, Governor

James M. Sherry, Director

Memorandum

To:	
From:	
Date:	
Subject:	Implementation Plan

The New York State Office of Counter Terrorism has received your request demonstrating an interest to develop a local Critical Infrastructure and Key Resources (CIKR) assessment team and delivery of the CIKR Asset Protection Technical Assistance Program (CAPTAP). To ensure resources are properly being allocated within the State, we ask that as a first step you provide an assessment team implementation plan.

Although no specific format is required for the implementation plan, the document should clearly communicate the following:

1. Identify all organizations that are expected to participate.
2. Desired interest and support from the leadership of which the team will be comprised.
3. Classify the jurisdiction/s in which the assessment work is expected to occur.
4. Communicate goals and outcomes anticipated from the assessment work.
5. Identify the expected leader/s of the assessment team.
6. List anticipated team members and the skill sets which are to be leverage.

The completed implementation plan can be emailed to jmcnamara@dhsec.ny.gov. Please feel free to reach out to our office for clarification and/or discussion on any of the items highlighted within the implementation plan recommendations. We look forward to potentially assisting you with the development of a Critical Infrastructure Protection Program and creating a new partnership.

John McNamara
NYS Office of Counter Terrorism
Critical Infrastructure Unit
(518) 242-5013

1220 Washington Avenue, State Office Building Campus
Building 7A, Suite 710
Albany, NY 12242



School Asset Type

When you enter a "School" Asset Type in the Asset Type template, you may enter characteristics that pertain to the School. When you enter "School" Asset Type information, you must populate data in the fields appended by an "*" unless otherwise noted. You may also enter one or multiple School Staff and/or On-site Law Enforcement record(s) for the School. These fields are available on subsequent pages of this template. For your convenience, dropdown field references have been included in the Appendix A – Template Drop-down References.

General School Information

Type of School	
School Year Schedule	Select an item
Safe School Plan (SSP)	<input type="radio"/> Yes <input type="radio"/> No
SSP Comments	
School Grade Levels	Select an item
Enrollment	
Staff Count	
Special Needs Students	<input type="radio"/> Yes <input type="radio"/> No

School Evacuation Information

Primary Evacuation Route	
Secondary Evacuation Route	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.



Fire Escape Location	
Fire Escape Capacity (lbs).	
School Facilities Information	
Auditorium Location	
Boiler Room Location	
Health Center Location	
Loading Dock Location	
Nurse Office Location	
Ramp Location	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.



Homeland
Security

Fire Safety System Location	
Pull Station Location	
Security System Location	
Swimming Pool Location	
Compressed Gas Location	
Liquid Fuels Location	
Natural Gas Shut Off	
Electrical Shut Off	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.



Homeland
Security

Other Utility Notes	
Class Period Bell Interruption/Override	
Commons	<input type="radio"/> Yes <input type="radio"/> No
Gymnasium	<input type="radio"/> Yes <input type="radio"/> No
Library	<input type="radio"/> Yes <input type="radio"/> No
Safe Room	
Roof Access Points	
Athletic Complex	

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.



School Staff

This template should be printed in conjunction with the "School" Asset Type template.

You may enter one or multiple School Staff record(s) as part of "School" Asset Type data. When you enter a School Staff record, you must enter data in the fields appended by an "*" unless otherwise noted.

*Last Name	
First Name	
Middle Initial	
Title	
Location	
*Handicapped	<input type="radio"/> Yes <input type="radio"/> No

*Last Name	
First Name	
Middle Initial	
Title	
Location	
*Handicapped	<input type="radio"/> Yes <input type="radio"/> No

[For additional School Staff records print copies of this page]

For questions concerning the information in this document, please contact the
ACAMS Help Desk at 1-866-634-1958 or acamshelp@hq.dhs.gov.

APPENDIX E. NEW YORK STATE—OFFICE OF COUNTER TERRORISM—ASSET PROCESSING SCHEDULE

DAY 1 – 30 July (Monday)		
Time:	Activity	Location / Asset Participants
0800-1200	Team Travel & Preparation	Albany to Rochester; Penfield High School
1200-1300	Lunch	TBD
1300-1400	In-brief & Equipment Drop Off (Requires a room for equipment to be stored throughout the week)	Penfield High School; Room TBD / All
1400-1600	Still Capture of School Envelope (Ingress/Egress Points)	High School Exterior / Knowledgeable Escort with access

DAY 2– 31 July (Tuesday)		
Time:	Activity	Location / Asset Participants
0800-1000	Still Capture of Section A	First Floor / Knowledgeable Escort with access
1000-1200	Still Capture of Section B	First Floor / Knowledgeable Escort with access
1200-1300	Lunch	TBD
1300-1500	Still Capture of Section C	First Floor / Knowledgeable Escort with access
1500-1700	Still Capture of Section D	First Floor / Knowledgeable Escort with access
1700-1900	Project Processing	Hotel / None

DAY 3 – 1 August (Wednesday)		
Time:	Activity	Location / Asset Participants
0800-1000	Still Capture of Section E	First Floor / Knowledgeable Escort with access
1000-1100	Still Capture of Section F	Second Floor / Knowledgeable Escort with access
1100-1200	Still Capture of Section G	Second Floor / Knowledgeable Escort with access
1200-1300	Lunch	TBD
1300-1400	Still Capture of Section G	Second Floor / Knowledgeable Escort with access
1400-1600	Still Capture of Section H	Second Floor / Knowledgeable Escort with access
1600-1700	Still Capture of Section J	Second Floor / Knowledgeable Escort with access
1700-1900	Project Processing	Hotel / None

DAY 4 – 2 August (Thursday)		
Time:	Activity	Location / Asset Participants
0800-1000	Still Capture of Bus Garage	Bus Garage / Knowledgeable Escort with access
1000-1200	Video Capture (Vehicle Ingress/Egress)	External / None
1200-1300	Lunch	TBD
1300-1400	Still Capture of Football Out-Building	Out-Building / Knowledgeable Escort with access
1400-1500	Still Capture of Parking Areas	External / None

DAY 4 – 2 August (Thursday)		
Time	Activity	Location / Asset Participants
1500-1600	Still Capture of Community Center (Exterior Only)	External / None
1600-1800	Project Processing	Hotel / None

DAY 5 – 3 August (Friday)		
Time:	Activity	Location / Asset Participants
0800-1000	Project Processing	Hotel / None
1000-1200	Gigapan Capture	Surrounding Area & Rooftop / Knowledgeable Escort with access
1200-1300	Lunch	TBD
1300-1500	Retakes (As Needed)	301 Park Avenue / Knowledgeable Escort with access

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APPENDIX F. NEW YORK STATE—OFFICE OF COUNTER TERRORISM—VULNERABILITY ASSESSMENT PRODUCT DEVELOPMENT PLAN

To:	Howard Henick
From:	John McNamara
Date:	6 July 2012
Subject:	Vulnerability Assessment Product Development Plan

Objective: The NYS Office of Counter Terrorism will develop a Vulnerability Assessment Product of the Penfield High School. The primary goal of this package is to support current critical infrastructure and key resources protection and response activities by utilizing a visual conceptualization template. Leveraging applications which capture graphical images and virtual environments the product will allow stakeholders to conduct detailed tabletops, virtual walkthroughs, utilize a dynamic white board and assist with other response activities. An All-Hazards Vulnerability Assessment will address key vulnerabilities and provide options for consideration.

Concept of Operation: All product development will focus on the following agreed upon potential threats to the grounds:

- Armed Intruder (Active Shooter)
- Bomb Threat (Improvised Explosive Device)
- Hazardous Materials On-Site (Chemical/Biological Introduction)
- Severe Weather
- Fire

Based upon the identified potential threat streams above, the following areas will be incorporated into the product during on-site collection.

- Comprehensive High School Interior (Physical & Mechanical Locations)
- High School Exterior (Ingress & Egress Locations, Rooftops)
- Football Out-building (Press Box; 3 Stories)
- Co-Generation Facility (connected to the building; near loading dock)
- Bus Garage
- Community Center Exterior
- Student & Employee Parking Areas
- Identification of Safe Room, Window Restrictions and Other Egress Areas

Facility Requirements: To ensure a product is developed which meets the needs of all involved, the EVAP and Assessment Team will require the following from the facility.

- Review and input provided on the Coordination Plan
- Digital floor plans/schematics of the covered areas within the grounds.
 - General Floor Layout
 - Infrastructure Component Layout (Water, Electrical, etc.)
- An escort with access to required collection areas.
- Digital copies of any documents which you wish to incorporate (Emergency Response Manual, etc.).

Proposed Timeline

- | | |
|-----------------------------------|--|
| • 6 July:
meeting. | Product demonstration and requirements |
| • 16 July:
returned to OCT. | Coordination Plan Edits Complete and |
| • 18 July:
(maps, plans, etc). | All Electronic Documents provided to OCT |
| • 30 July -3 August:
Team). | Pre-Assessment On-Site collection (2 Person |
| • 12 - 14 September:
Team). | On-Site Assessment; Tentative (3 Person |
| • 30 September: | Rough Draft Product Review. |
| • 5 October: | Final Product Complete. |

Conclusion: The product will not be finalized without approval of the identified leadership responsible for the Penfield High School. Additionally, distribution of the product will be limited to only those first responder agencies approved by the Penfield High School.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California